POPULAR
Computing
WEEKLY

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Vol 4 No 4

QL support and sales still 'slow'

EXACTLY one year after the launch of the Sinclair QL the machine has still failed to firmly establish itself in the market.

To date, the number of QL software programs available in the shops is still in single figures and, despite announcing seven programs at last week's Which Computer? Show, support from independent software houses that Sinclair's managing director Nigel Searle promised last June has largely not materialised.

None of the peripherals promised a year ago by Sinclair – except the monitor display – have yet appeared.

In June, Nigel Searle claimed there would be over 50 titles by the end of 1984, and that Psion, Quicksilva, Melbourne House, and Picturesque among others were in discussions regarding software production.

Yet Psion has so far produced only one program – in addition to the bundled packages with the QL itself – *QL Chess*.

None of the others have produced any QL software. Melbourne House, for example, began work on a QL version of *The Hobbit* and then pulled out. Alan Giles, software products co-ordinator at Melbourne House said "We will continue to publish books for the QL, but as far as software is concerned, we will wait until we are convinced there is a market for it, since it doesn't appear that many QLs have been sold."

Part of the problem for software companies is the microdrive storage system, as David Link of Hi-soft, whose QL *Disassembler/Debugger* is due out within the next couple of weeks, explained: "The QL really needs a better storage sys-

continued on page 4 ▶

Atari add-ons planned for major micros

ATARI is to sell peripherals for the Commodore 64 and Spectrum – including a 3½ inch disc drive for under $100 (around £100).

The company's range of disc drives, printers, and monitors to accompany the XE and ST series machines will be adapted with appropriate interfaces to enable the add-ons to be used on other popular machines.

"The peripherals will be marketed under the Atarisoft name, as part of Atarisoft's expansion," said Rob Harding, Atari UK's marketing

continued on page 4 ▶

Sinclair drops Spectrum

SINCLAIR has reduced the price of the Spectrum + by £50 and is to discontinue the rubber-keyed version in the UK.

The Spectrum + now costs £129.95 and the Sinclair six-pack of software is no longer bundled with the machine.

The six-pack is now available separately at £14.95, only if purchased at the same time as a Spectrum +.

The original Spectrum, launched in April 1982, is to be phased out in the UK, but will continue to be sold overseas.

In this country there is no longer a recommended retail price for the Spectrum while

continued on page 5 ▶

Possible price cut for BBC

A PRICE cut for the BBC B micro could be on the way following a lean Christmas for Acorn Computer.

High Street stores have already been discounting the machine, from £399 to around £360 since Christmas.

"A price cut is certainly an option open to Acorn," explained an Acorn spokesman.

"So far the price has stayed high, because demand has al-

continued on page 4 ▶

YOUR POLL RESULTS - P 14

INSIDE ⟩ MICROFAIR TICKET OFFER > KNIGHT LORE MAP ⟩

No man's land

ORIC/ATMOS

ORIC/ATMOS

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Vol 4 No 4

POPULAR Computing WEEKLY

View

After disappointing sales this Christmas, Acorn and Sinclair must now plan their strategy for 1985.

Sinclair has been the first to react by cutting £50 off the cost of its Spectrum + model. If Acorn is serious about being in the home micro business this time next year then it too must drop the cost of the Electron and BBC.

Unfortunately the reasons for sluggish Christmas micro sales have little to do with cost, and more to do with the machines themselves. The first-time computer buyer's market is now well saturated and the bulk of new purchases are being made by existing computer owners up-grading. For these buyers, neither the Spectrum + nor the BBC are attractive options. But for its microdrives they would buy a QL. Instead they are tending to settle for an Amstrad.

What will Sinclair and Acorn be offering this rapidly expanding group of purchasers next Christmas to rival Atari's impressive ST range?

Acorn must produce a new home micro, and fast; cutting the BBC price won't do. Acorn, at present, seems uncertain if it wants to be in the home or business market.

Sinclair's problems may be less serious, but they are still bad enough. Microdrives have meant that the QL has never taken off properly since its launch this time last year. Sinclair has lamentably failed to support the machine either with peripherals or software.

Could it be that the reason Sinclair has been so slow to support the QL is that it has realised its bad judgement in using microdrives and has been working on a new computer? If so, it must have cassette and disc interfaces, and preferably be 68000-based.

Cutting the cost of the Spectrum + isn't enough.

Presents...

News > Commodore's 1542 disc drive shelved 4

Show Report > Born to Run – all the new software from this year's CES 11

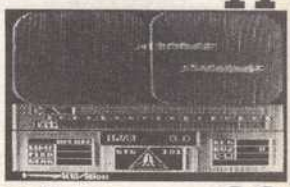
Star Games > You're a small fish in a big lake – all this and philosophy too in Fishpond for the CPC 464 12

Readers Poll Results > We've finally waded through entries and here it is – what you thought of 1984 14

Streetlife > Has Graham Taylor finally met his match? Find out as he pays a visit to Dateline 17

Software Reviews > Island of Xaan from Robico Software > Return of the Joystick from Delta 4 20

Spectrum > A S Burnham brings you a really big dump for a ZX Printer 24



BBC and Electron > A sliding puzzle program brought to you by Pro-Supply Ltd 26

Commodore 64 > Create on-screen windows with a little help from Adrian Warman 30

Dragon > A machine-code sound command for the green-screened beast courtesy of Wayne Smithson 34

Best of the Rest > Letters 6 > The QL Page 32 > Open Forum 36 > Book Ends 36 > Baud Walk 37 > Arcade Avenue 38 > Adventure Corner 40 > Peek & Poke 43 > Readers Chart, Diary, Top Ten, 50 > New Releases 52 > This Week 52 > Puzzle, Ziggurat, Hackers 54

Futures...

CST's QL disc interface reviewed. . . Amstrad ROM revealed. . . machine code text animation on Spectrum

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ABC

56,052 copies sold every week (Jan-June 1984 ABC).

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year

CBM 1542 disc drive shelved

COMMODORE has shelved plans to produce its 1542 disc drive.

The 1542, intended as a successor to the 1541, was announced last year at the same time as the Plus/4 and C16.

Instead, at the Winter Consumer Electronics Show at the beginning of January, Commodore exhibited a new disc drive, the 1571.

Chris West, Commodore's software evaluation manager, said, "The 1542 disc drive has proved too expensive to manufacture."

The alternative 1571 is planned to accompany the C128, but should also be fully compatible with the Commodore 64, Plus/4, and LCD portable, also launched at CES. It is expected to be available in the UK when the C128 is launched here – in June/July. Prices have not yet been fixed.

● Commodore also has a range of Infocom adventures specifically for the Plus/4 in the UK in the pipeline. Infocom's *Zork* trilogy and *Starcross* should be available next month at £11.99, while *Deadline* and *Suspended* are set for March/April at the same price, as is *Hitchhikers Guide to the Galaxy* (see *Popular Computing Weekly*, January 17).

Other Plus/4 titles planned include *Tony Hart Art Master*, *Logo* and *Graphics Package*, due out around March. Commodore has also converted a number of the ASK educational packages, *Number Chaser*, *Picture Builder*, and *Hide and Seek*, which sould be available at the end of this month.

Acorn

◀ continued from page 1

ways been ahead of supply. That position is now evening out, so it's a possibility.

Sales of the BBC and Electron were lower than expected at Christmas and Acorn's share price on the Unlisted Securities Market has since fallen considerably.

After the announcement of the ABC range in September the share price held steady until Christmas at around 80p. Since then it has plummeted to 43p.

Atari add-ons

◀ continued from page 1

manager. "Initially, the interfaces will be introduced for the Commodore 64, Apple II, and IBM, the other big-selling machines in the States. But they will be made available in this country too, and a Spectrum version will almost certainly be produced.

"This is a major opportunity for Atari to go heavily into the peripherals market. The idea of producing peripherals which can be used on a number of machines may be new, but we want to make sure there's an Atari product on every desk, even if everyone doesn't buy one of our machines."

Full technical details are not yet available, but the disc drives conform to the 3½ inch Sony standard, and the lowest-priced model will cost under $100. Prices have yet to be finalised.

The disc and printer interfaces are planned to be available when the peripherals are launched, in either May or June.

IBM clones at NEC show

COMMODORE formally launched its IBM compatible PC at the Which Computer? Show at Birmingham NEC last week. Although several of the 8088 based 256K machines were on display, no price or availability details were announced.

Among the other companies exhibiting at the largely business computer show was Sinclair, which demonstrated new QL software with a predominantly business slant (see separate News item). The company also celebrated the sale of its five millionth computer with a raffle to win a gold-coloured QL. OE's three-part QL modem (see *Popular Computing Weekly*, 29 November) was also on display.

Toshiba also launched two new IBM compatible micros – one a portable – at around £2,000 each. Quest showed its QL peripherals and also a number of business software packages written for Amsoft on the CPC 464. The five programs are *Invoicing*, *Sales Ledger*, *Stock Control*, *Purchase Ledger* and *Nominal Ledger*.

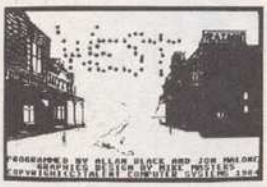
Oxford Computer Publishing launched a disc-based accounts system for the Spectrum using a SP-DOS interface and Shugart-driven 3½ inch disc drive.

QL sales

◀ continued from page 1

tem. At the moment there is only one place in the country that will directly duplicate microdrives and it copies them one by one."

However, John Tweedy at Talent, which has already released two adventures, *West*, and *Zkul*, on the QL sees things differently. "In the three weeks that the programs have been out, we



have achieved three quarters of the sales that our seven programs made last summer. We have had no problem getting the microdrive cartridges from Sinclair, and while the microdrive duplication is expensive and pushes the price of the product up, we fully intend to write more for the machine."

At the Which Computer? Show last week, Sinclair previewed the first of its programs for the QL.

Triptych's *Project Planner*, *Decision Maker*, and *Entrepreneur* have each been licensed to Sinclair for the QL at £39.95. Sagesoft's *Integrated Accounts* program was shown at £89.95. *Cash Trader*, a small business book-keeping program, will cost £69.95, and a *QL Assembler*, licensed from GST, will cost £39.95.

Also announced, though not shown, were *Touch 'n' Go* – a typing program at £24.95 – and *QL Pascal* from Metacomco at £89.95.

Bandersnatch, the ex-Imagine megagame, being developed for the QL by Fire Iron is according to Ian Hetherington soon to be completed. Games Workshop has also converted its Spectrum Wargame *D-Day* for the QL, which will be available in March at £24.95.

Neither the 0.5M Rom expansion nor the Winchester Interface and hard disc have not yet appeared. There is no terminal emulator, no multi-channel sound generator, no IEEE-488 or parallel Centronics Interfaces, and no analogue/digital interface.

In its present form, too, the QL will only operate one peripheral at a time. Some software juggling is needed on the part of the user to correct this.

With the small amount of hardware and software support, it is not surprising that the sales have been affected. One press report quoted a figure of 40,000 machines sold since January 1984. Sinclair would not confirm the figure and declined to give any sales indication.

"Sales of the Sinclair QL have been very slow," said a spokeswoman for W H Smith.

"QL sales have been on a par with those for the Plus/4", said John Flatman of Boots, who added that sales of the Plus/4 had been disappointing.

● Cambridge-based CST has produced a disc interface for the QL.

The device links to CST's BBC disc drive unit – a 5¼ inch double-sided double-density system.

Mitsubishi cuts price on MSX

MITSUBISHI has become the third company to reduce the price of its MSX computers, following Toshiba and Goldstar (see *Popular Computing Weekly*, Dec 20).

The 64K MLF 80, which was launched at £299, now costs £275. The 32K MLF48 is now £225, down from £249.

Along with the price cut, six software programs now come free with the machines. The pack contains *Chuckie Egg* (A 'n' F), *Les Flics* (PSS), *Blagger* (Alligata), *Eric and the Floaters* (Hudson), *Mr Wong's Loopy Laundry* (Artic) and *Shark Hunter*.

"Dealers were beginning to discount on the price of the Mitsubishi MSX's in order to remain competitive with other machines, so it seemed sensible to make a price cut official" said a spokesman for Mitsubishi.

"The software is not a limited offer – it will continue for the foreseeable future."

Britons convicted on export charge

TWO business men have become the first Britons to be convicted of selling banned computer technology behind the Iron Curtain.

The men, 42 year old John Ludlam and Christopher Millington 40, were prosecuted under the Export of Goods (Control) Act of 1981, which governs the restrictions regarding the sale of high technology to the Soviet Bloc countries.

At Southwark Crown Court Ludlam pleaded guilty to 13 charges of exporting prohibited goods between October 1982 and April 1983. Millington admitted two charges.

Ludlam was sentenced to the maximum two years in prison and Millington was sentenced to four months suspended for two years. Ludlam's company, Michael Ludlam Associates was fined £30,000.

The two men flew to Switzerland in November 1982, after Ludlam had obtained export licences saying the computers were for a Swiss drugs company. The pair then travelled to Sofia in Bulgaria, and discussed the sale of the six computers with Bulgarian government representatives.

The question of which computer technology should and should not be sold behind the Iron Curtain is determined by the Coordinating Committee (CoCom) a NATO administered multi-national committee, which meets every six months to review its decisions. Each CoCom member state then prepares its own legislation in accordance with CoCom's decisions. The 1981 Export of Goods (Control) Act in this country will probably be superseded shortly to take account of CoCom's latest review in Paris last November, when some of the rules were relaxed.

The relaxation has led to a sales drive by ACT – its Eastern Bloc distributors Quest Automation has taken the Apricot range to the USSR, although until the new recommendations become law – in about six months time – Quest will only be able to exhibit the machines, not sell them.

Spectrum +

◄ continued from page 1

stocks are sold off, so heavy discounting can be expected.

Sir Clive Sinclair said, "The home computer market is currently entering a very vigorous phase and we anticipate strong competition from US manufacturers in particular.

"Economies of scale in introducing the Spectrum+, which has reached in excess of 200,000 units per month have now permitted us to take a strong lead in reducing prices."

Sinclair's up-grade options from conventional Spectrum to Spectrum+ have fallen in price accordingly. The upgrade in kit-form now costs £20. If Sinclair carries out the work it will cost £30.

The contents of the six-pack have also changed slightly. The £14.95 package now consists of *Tasword 2, Tiny Touch 'n' Go, Return of the Jedi: Deathstar Battle, Scrabble, Chess* and *Vu-3D*.

Free ticket offer

200 free tickets

for the 15th ZX Microfair

Popular Computing Weekly is giving away 200 free tickets for the 15th ZX Microfair – to be held at Alexandra Palace on Saturday February 9 – to the first 200 people who submit either programs for the ZX Spectrum or QL or letters for possible publication in the magazine **before February 2.**

All you have to do for your free ticket is to enclose a stamped addressed envelope with your program or letter submission.

Remember – the tickets go to the first 200 people to send in a program and the offer applies only to programs received by us **no later than midday on February 2.**

Letters

A function of the QL

SuperBasic on the QL is without an *Sgn* function.

One way of defining this in SuperBasic (where *True* = 1 and *False* = 0) is this:

```
10 DEFine FUNction SGN (x)
20 RETurn (x < >0) - 2^8(x <0)
30 END DEFine
```

Dan Altman
30 Jenner Road
London N16

Warm start, quiet crash

In Andy Pennell's review of the Enterprise computer I wondered why he made so little of the feature of the *Reset* switch which gives the machine a 'warm start'.

Having a QL which is very likely to 'quiet crash' resulting in the disappearance of the cursor and the failure of the machine to respond in any way to presses on the keyboard, I would consider such a facility a fantastic addition – preventing hours of frustration.

Does anyone 'out there' know how such a feature could be added to the QL – I would be delighted?

R A Crawford
89 Monument Road
Ayr
Scotland

Distribution pressures

Adding to J Keene's comments (January 3 issue) about software distribution, he is correct in his assumption about distributors like Websters being influenced by pre-release advertising when making up a stock-list.

All the major distributors now insist on extensive pre-release advertising before a program is even considered for inclusion in their catalogue. The outlay required to do this is often beyond the recourses of many smaller software houses.

The discounts demanded by distributors have risen steadily over the past two years, and now often exceed 50-60 per cent. If you don't accept the discount levels you cannot get your program into the shops and the result: no sales

It is common for software houses to promote a game only to see it pushed out of the running at the last minute by the latest 'mega-game'. Distributors now have fixed numbers of releases they will take on to distribute each month. If you aren't on their Top 20 – forget it.

Programs promoted as the distributor desires lose impact by the time they eventually get into the shops. The program name has become 'old hat' in the two months it takes for distribution to the shops.

I strongly feel that many good programs fail to achieve their full potential due to the present monopolistic attitudes of the distributors.

The present system of providing software on the retail shelves is stifling the market and offers no room for new small software houses to grow and establish themselves.

Jeff Tullin
22 Kings Close
Gateshead
Tyne and Wear

Take it or leave it?

I found the letter from D R Halliwell about the second hand value of software (January 10 issue) rather interesting.

If everyone thinks the way that he/she does, it probably accounts for my not having yet been able to purchase the second hand computer of my choice.

It may well be that D Halliwell paid around £350 for the software that is now being offered for sale as around £100, but I wonder if it has occurred to him/her that prospective purchasers may not *want* the kind of software that is being offered, in the first place?

I, for example, have been looking for a suitable BBC B with a disc drive for some time now, but I want it for use with database and word processing discs which I already own, and not for playing games in medieval castles.

Piracy is probably the least important factor governing the sale of secondhand software, however valuable. Instead, it is just not wanted in the first place. Anyone wishing to off-load their unwanted games will encounter the problem that there are so many other uses to which computers can be put that entertainment is low on some peoples' shopping lists.

The moral for D Halliwell is, by all means purchase software to your heart's delight, but don't *expect* someone else to want it after you have finished with it. And certainly don't blame piracy.

K Mason
19 Lynchets Crescent
Hove
Sussex

"But, how many are still working?"

Disinfected sorceror

I was pleased to see a review of my program *The Staff of Zaranol* – in your magazine (Jan 3 issue).

The Vocabulary was stated as containing only 30 words and this is certainly not the case. The interpreter will in fact recognise well over 150 words.

All the names, spells, objects, etc, used throughout are authentic – the exception being 'Zaranol'.

I felt this sounded just right for a mighty sorceror until you pointed out that it sounds more like a new brand of disinfectant.

On reflection, I probably agree with you.

M J Gearing
Waterlooville
Hants

Keyboard scanning

Thank you for publishing an article on our Saga 1 Emperor keyboard.

After investing a considerable amount of monies and personal time investigating the Spectrum keyboard and its possibilities I would like to make the following points:

No matter how good a replacement keyboard is for the Spectrum, the user's speed is limited by the speed at which the Spectrum scans the keyboard device, which in most people's terms would be 'fairly slowly'.

With the Spectrum+, Sinclair modified the circuitry of the Spectrum (Issue 4B!) to accommodate it.

Tony Kendle may also be interested to know that we have made two modifications to the Saga 1 Emperor so that the interface components are now printed onto the connecting ribbons, so there are no problems with fitting to Issue 1 Spectrums.

D C White
Saga Systems
2 Eve Road
Woking
Surrey

MUSIC VOUCHER 2

Save the Amstrad

This may be of interest to Amstrad readers with Save problems.

Although getting all the right screen messages, and hearing the bytes being transferred, I have found that either the *Save* has failed or the computer is unable to sense the program in *Cat* or *Load*, about 70% of the time.

Initially, I suspected duff tapes but they recorded audio or Spectrum programs without any problems. The conclusion seems to be that if the tape has been previously used either to record programs from other makes of computer, the residual signal present either corrupts *Save*, or confuses the Amstrad so that it does not detect the program.

The answer seems to be to always use new tapes or to erase old tapes by recording without input on an ordinary audio recorder, before using them for the Amstrad.

Dorene Cox
Dagenham
Essex

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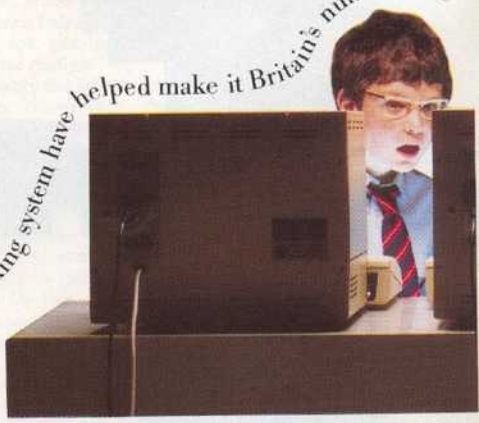
The BBC Micro is only 16" long. But it stretches indefinitely.

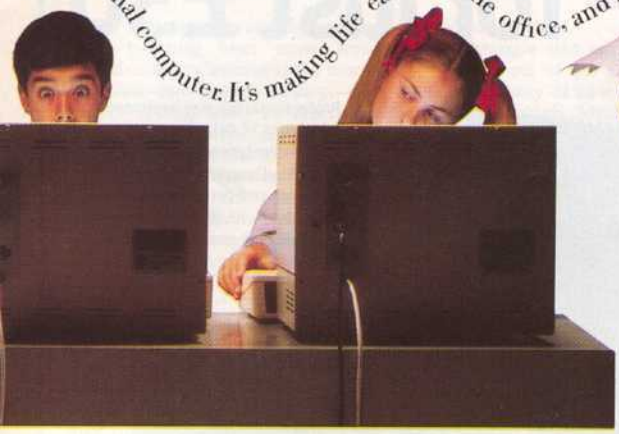
It stretches into schools where BBC Basic and the Econet networking system have helped make it Britain's number one



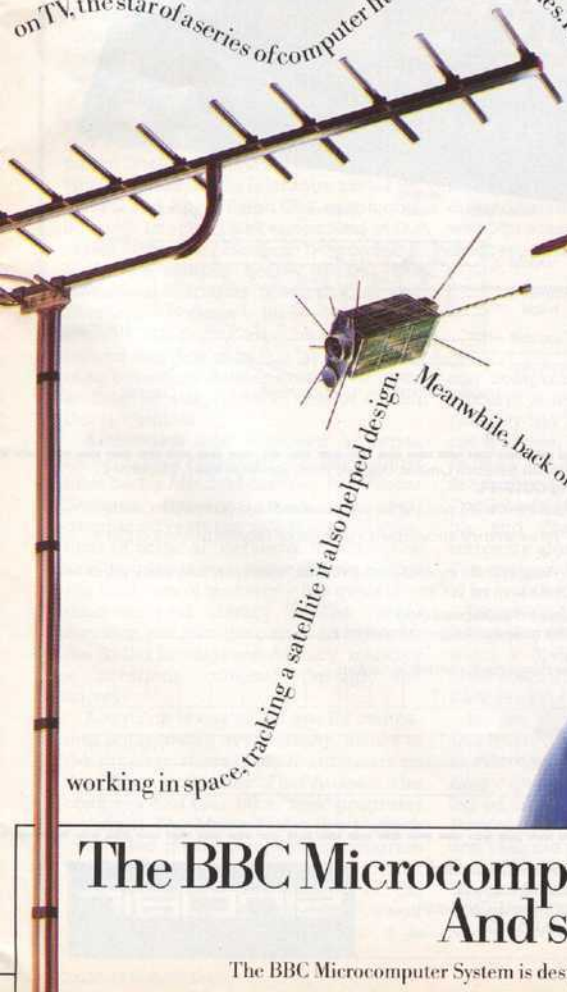
It's down at the doctor's, helping run the practice thanks to an ingenious program designed by two GPs. You'll catch it

It can take you to the theatre using its Prestel and Teletext adaptors. While helping out at the lab with its scientific monitoring interface. It has even been

educational computer. It's making life easier in the office, and has grown into the country's top micro for small businessmen.



on TV, the star of a series of computer literacy programmes. Its colour graphics and new Bitstik make it welcome in design studios.



working in space, tracking a satellite it also helped design. Meanwhile, back on Earth at 49 Acacia Avenue, Kingsmead, Middle...

The BBC Microcomputer System. The world's best. And still growing.

The BBC Microcomputer System is designed, produced and distributed by Acorn Computers Ltd.

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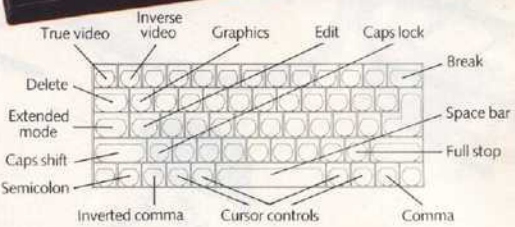
- Professional full-size keyboard – includes 17 extra keys.
- Responsive typewriter-style action.
- Accepts all current Spectrum software and peripherals.
- Complete with 80-page User Guide and Companion Cassette.



Here's some exciting news for 48K Spectrum owners ... the official Spectrum Upgrade Kit.

The £30 Kit has everything you need to turn your Spectrum into the stylish new Spectrum +. You don't even need an understanding of electronics, just the ability to solder a few wires together! The leaflet in the kit gives clear, step by step instructions.

If you're not sure about doing it yourself, don't worry. Simply return your 48K Spectrum to Sinclair and for £50 we'll upgrade it for you.

Whichever you decide on, you'll also receive the new 80-page User Guide and Companion Cassette.

The bigger, better Spectrum keyboard

The Spectrum + measures 12½" x 6". It has a large typewriter-style keyboard, with hard, moulded keys.

You'll find the new keyboard has a smooth, positive action – ideal for touch-typing, word processing, simulation programs, and extended programming sessions. Two rectractable legs give a perfect typing position.

There are 58 keys in all, including 17 new keys. Programmers will be pleased to see dedicated punctuation keys, a space bar, and separate shift keys for graphics and extended modes. And a reset button allows you to clear a program from your computer's memory without disconnecting the power supply.

The official Spectrum Upgrade

Naturally your upgraded computer will accept all the peripherals in your Sinclair system - Interface 1, Microdrives and so on, as well as all Spectrum software.

Just as important, new Spectrum software and peripherals will be designed with the Spectrum + in mind. So the Sinclair upgrade adds stylish looks, new capabilities ... and new potential for the future.

Included – the new Spectrum + User Guide and Companion Cassette

The new User Guide has over 80 pages of information, including a handy BASIC dictionary. The Companion Cassette provides an interactive tour of the new keyboard, and includes three entertaining arcade games.

TO ORDER BY MAIL:

When ordering the Upgrade Service, send off your 48K Spectrum to the address below, carefully wrapped, together with the completed coupon and appropriate payment. (Please do *not* return the mains adaptor, manual or other ancillaries.) Your upgraded computer will be despatched to you within 10 days of receiving your order.

When ordering the Upgrade Kit, simply complete the coupon, enclosing the appropriate payment and post it to us at the address below. Please allow up to 28 days for delivery.

BY PHONE: Access or Barclaycard holders can call Camberley (0276) 685311 for personal attention, 9am to 5pm Monday to Friday. Only the Upgrade Kits can be ordered by phone.

Please note: the upgrade offer applies to working 48K Spectrum models in the UK only.

To: Sinclair Research Limited, Upgrade Dept., Stanhope Road, Camberley, Surrey, GU15 3PS.

All prices include VAT, post and packing, User Guide and Companion Cassette.

☐ Please send me the Spectrum + Upgrade Kit. I enclose payment of £30.
OR
☐ Please upgrade my 48K Spectrum for me. I enclose my computer together with payment of £50.

I enclose a cheque/postal order payable to Sinclair Research Limited for £_____

OR

Please charge my Access/Barclaycard no.

Signature_____

PLEASE PRINT

Name: Mr/Mrs/Ms_____

Address_____

_____

DOP 504

Sinclair Research Limited,
Upgrade Department,
Stanhope Road, Camberley,
Surrey, GU15 3PS.

sinclair

Art of the States

***Dafna Israeli** surveys the new software on offer at this year's Winter Consumer Electronics Show at Las Vegas*

A veil of gloom and despondency is hanging over most American software houses at the moment

Games just aren't selling, and the mighty names such as Sierra-on-line, Epyx and Spinnaker are all experiencing financial difficulties.

At Las Vegas, this was reflected in the relatively small number of programs announced for 1985.

The home/games machines in the US are the IBM PC, Apple IIc and IIe, and the Commodore 64.

The Plus/4 and C16 have not gone down at all well, and the only software being shown for them was Commodore's own.

No-one has written for any Atari machines for the last six months after Atari's well publicised financial troubles and subsequent sale to Jack Tramiel.

However, the new Atari range, shown for the first time at this CES was greeted enthusiastically by companies looking for a new market to take them back to healthy profits.

"Bookware' was the buzz word for this year. Publishers **Prentice-Hall**, **Haydn** and **Bantam Books** all showed a selection of books and related software, Bantam launched *Living Literature* series for IBM PC and Apple II and C64, in conjunction with Imagic. Titles announced in the series so far are *I Damiano* based on R A McAvoy's science fiction trilogy, *The Complete Scarsdale Medical Diet* and *Sherlock Holmes*. Like Melbourne House's program, also based on the famous sleuth stories, this takes the form of an adventure Holmes must solve, rather than an adaptation of one of Conan Doyle's stories.

Activision also launched a series called *Living Computer Novels*, the first titles being *Mindshadow* and *The Tracer Sanction*. However, these are text/graphic adventures rather than adaptations of original literature. *Mindshadow* sets the player on a desert island suffering from loss of memory – the quest is to discover your identity. In *The Tracer Sanction* you play the part of an agent for the Stellar Intelligence Agency, tracking a notorious criminal through the universe.

Activision is one of the few US companies not counting every penny, thanks to the runaway success of *Ghostbusters* on the C64 on both sides of the Atlantic. The company had four other new programs on show. *The Music Studio* is a joystick controlled music composition program for the Commodore 64 and *Rock'n Roll*, *Web Dimension*, and *Master of the Lamps* are all arcade-cum-strategy games using sophistcated music *à la Ghostbusters*.

Imagic also appears to be escaping the worst of the software recession. It had plenty of new products on display, two of which, *Macbeth* and *Tournament Tennis* look very familiar. *Macbeth* is a licensed version of the game available in the UK from Creative Sparks, *Tornament Tennis* is better known as Psion's *Match Point* in this country. Imagic also made additions to its Education Simulation, Computer Talk, Action Sports and Arcade Action ranges. For under $20, many of the Arcade Action titles are being converted to the Commodore 64.

Computer Talk is a new line, using synthesised speech in educational programs.

Broderbund, one of the biggest names in American software, will be competing against Activision with its new music composer and synthesiser program for the Commodore 64, called *The Music Shop*.

The Music Shop uses Macintosh-style pull-down menus and windows, on-screen musical notation, and editing facilities using commands similar to word-processing. The company's other products showed a heavily educational bias, with the Muppets being used to add entertainment to a package teaching word-processing, electronic mailing, database management, programming

The inner workings

and computer-aided design. *Welcome Aboard! A Muppet Cruise to Computer Literacy* has been launched for the Apple II series, but a Commodore 64 conversion is on the way. Other new Broderbund titles included a *Science Toolkit* educational program for the Apple and *The Ancient Art of War*, a wargame design program for the IBM. The company also showed a C64 version of its stylish *Karateka* Apple title.

Sierra-on-line, another big name, also had plenty of new products on the stand, which it divided into three categories, Entertainment, Productivity and Educational.

In the Entertainment range, *King's Quest II: Romancing the Throne*, sequel to the highly acclaimed Apple game *King's Quest*, has appeared. And following on from *BC Quest for Tires*, *Grog's Revenge* involves a quest for clams – don't ask me why – and uses many of the same features as its predecessor. *Black Onyx*, a fantasy role-playing game originating from Japan, was also launched. Sierra's productivity software launches

The Complete Scarsdale Medical Diet

centred around the Apple II.

CBS which set up its UK branch last Autumn, introduced 12 new titles. Eight of these are educational packages, but the company also followed up *Murder by the Dozen* with *Felony!* for the the Apple, C64 and IBM, a strategy game in which a player must solve 12 crimes. Also for the three machines – *Interplanetary Pilot* is a space flight simulator, *Quink* a multi-player quiz game in the same line as *Trivial Pursuit*, while *The Railroad Works* is a computerised model railway set in which the object is to plan and build railroad networks across 12 screens.

Only one British company exhibited, **Mastertronic**, whose budget-price software philosophy has gone down as successfully in the US as it has with buyers here. Its C64 games sell on disc for $9.99. Mastertronic also has the US distribution rights to **Microsoft's** products – and *Games Creator* was voted best C64 software product at the show.

Alongside the hardware which caught everyone's attention, **Atari** also announced developments on the software side. *Infinity* and *Atari Writer+*, two utilities, were shown for its XE and 800XL range. *Infinity* is a similar to *Lotus 1-2-3*, while *Atari Writer+* is a word processor with built-in proof reader. Atari also previewed a number of forthcoming products: two more utilities, one a guide to the inner workings of Atari computers, called *Atari Tutorial*, and an as yet untitled icon-driven graphics drawing package. *Silent Butler*, rather misleadingly titled, is actually a domestic accounts program, and Atari also has a music composer program lined up, again icon-driven, with editing, saving, tempo and key change facilities.

On the games side, Atari is converting the arcade games *Crystal Castles* and *Mario Bros* for the 800XL/XE machines.

Judging from the stagnation of the software industry in general, there could be a flood of conversions and new programs produced for the new Atari machines as and when they become available.

It all depends on Jack Tramiel producing the goods he claims to be producing in the quantity promised.

Fishpond

Dave Muir makes some interesting philosophical points with Fishpond for the Amstrad CPC 464

This program – an arcade game – has (using cursor keys) been written to work with the keyboard or joystick and contains a title page with full instructions.

The player controls a fish in a fishpond, evading the big fish that appear and eating all the tiddlers available. The player's fish automatically drifts from side to side and he/she controls vertical movement. The screen wraps around vertically. The fish's mouth has to be opened to eat another fish, by pressing 'pre', or 'copy'.

Program Notes

It is not easy to convert the program for use on another machine as it uses CPC 464 specific features.

The listing contains plenty of *Rem* statements which should make the running of the program transparent. These can all be omitted when the program is typed in. If this is done, readers may wish to alter Line 280 in the program to read – *every 9* instead of *every 10*, giving a faster game.

Variables

pnx,pny,pox,poy – new and old x,y positions player fish.

pnc,poc – new and old player character for fish.

pm – mouth open/shut

pd – direction

bfx,bfy,lfx,lfy – big small fish x,y directions

bfd,lfd – big small fish directions

bk,lk – flags to show big small fishes

tbf,tlf – big small fish strings

tbf(1)|(2) – characters making up *tbf* string

ll – flag life lost

s – score

fnu – string lives left display

l – lives left

ci – flag signals interrupt shorten

bi – big fish appearance interrupt duration

loc,locy,sca – scale drawing reeds

```
5 '      FISHPOND
6 '         BY
7 '      DAVEMUIR
8 '
20 GOTO 1080
30 '
40 '***UPDATE LIVES***
50 CLS #2:PRINT #2,FNu;:RETURN
60 '
70 '***UPDATE SCORE***
80 IF s>0 THEN IF s/50=INT(s/50) THEN s=s+50:ci=-1
90 CLS #3:PRINT #3,s;:RETURN
100 '
110 '***UPDATE SCREEN POSITIONS COMPUTER FISH***
120 '
130 '***BIG FISH***
140 DI:IF NOT bk THEN 200
150 IF ABS(bfy-pny)<24 AND ABS(bfx+32-pnx)<32 THEN ll=-1:bk=0
:SOUND 7,50,55,7,0, 3,2:FOR i=1 TO 400:NEXT:EI:RETURN:'BIG FI
SH HITS PLAYER FISH
160 PLOT 0,0,6:MOVE bfx,bfy:PRINT tbf;:bfx=bfx+32*bfd:bfy=bfy
+8*SGN(pny-bfy):tbf=tbf(1-1*(ABS(bfx-pnx)<128)):MOVE bfx,bfy:
PRINT tbf;
170 IF (bfd=-1 AND bfx<-64) OR (bfd=1 AND bfx>704) THEN bk=0
180 '
190 '***SMALL FISH***
200 IF NOT lk THEN EI:RETURN
210 IF pm=2 THEN IF ABS(lfy-pny)<16 AND ABS(lfx-pnx)<24 THEN
s=s+10:GOSUB 80:lk=0:SOUND 7,20,30,4,0,4,2:FOR i=1 TO 200:
NEXT:PLOT 0,0,5:MOVE lfx,lfy:PRINT tlf;:EI:RETURN:'SMALL FISH
 HITS PLAYER FISH
220 PLOT 0,0,5:MOVE lfx,lfy:PRINT tlf;:lfx=lfx+32*lfd:MOVE lf
x,lfy:PRINT tlf;
230 IF (lfd=-1 AND lfx<-64) OR (lfd=1 AND lfx>704) THEN lk=0
240 EI:RETURN
250 '
260 '***SET INTERRUPTS***
270 DI:pm=0:EI:RETURN
280 EVERY 10,0 GOSUB 140
290 EVERY 50,1 GOSUB 520
300 EVERY bi,2 GOSUB 590
310 '
320 '***LIFE LOST***
330 IF ll THEN da=REMAIN(0):da=REMAIN(1):da=REMAIN(2):da=REMA
IN(3):MODE 0:CLS:ll=0:l=l-1:IF l<1 THEN 1020 ELSE 850
340 '
350 '***SPEED UP BIG FISH APPEARANCES***
360 IF ci THEN ci=0:bi=bi-10:da=REMAIN(2):GOTO 300
370 '
380 '***PLAYER'S MOVE***
390 EI:DI
400 IF INKEY(76)=0 OR INKEY(9)=0 THEN IF pnc>251 THEN pm=2:AF
TER 10,3 GOSUB 270
410 IF (pnx<0 AND pd=-1) OR (pnx>608 AND pd=1) THEN pd=-pd:pn
c=252-(pd=1)
420 pnx=pnx+pd*16
430 IF INKEY(72)=0 OR INKEY(0)=0 THEN pny=pny+8:GOTO 450
440 IF INKEY(73)=0 OR INKEY(2)=0 THEN pny=pny-8:GOTO 450
450 IF bk THEN IF ABS(bfy-pny)<24 THEN IF ABS(bfx+32-pnx)<32
THEN ll=-1:bk=0:SOUND 7,50,55,7,0,3,2:FOR i=1 TO 400:NEXT:GOTO
330:'HIT BIG FISH
460 IF lk THEN IF pm=2 THEN IF ABS(lfy-pny)<16 AND ABS(lfx-pnx
)<24 THEN s=s+10:GOSUB 80:lk=0:SOUND 7,20,30,4,0,4,2:FOR i=1 T
O 200:NEXT:PLOT 0,0,5:MOVE lfx,lfy:PRINT tlf;:pnx=pox:pny=poy:
pm=0:GOTO 330:'HIT SMALL FISH
470 IF pny>399 THEN pny=96
480 IF pny<96 THEN pny=399
490 PLOT 0,0,1:MOVE pox,poy:PRINT CHR$(poc);:MOVE pnx,pny:PRIN
T CHR$(pnc-pm);:poc=pnc-pm:pox=pnx:poy=pny:GOTO 330
500 '
510 '***SET SMALL FISH TO APPEAR***
520 DI:IF lk THEN EI:RETURN
530 lfd=1+2*(pnx<312)
540 RANDOMIZE TIME
550 lfy=120+RND*240:lfx=-32-672*(lfd=-1):lk=-1
560 PLOT 0,0,5:tlf=CHR$(255+(lfd=-1)):MOVE lfx,lfy:PRINT tlf;
:EI:RETURN
570 '
580 '***SET BIG FISH TO APPEAR***
590 DI:IF bk THEN EI:RETURN
600 bfd=1+2*(pnx<312)
610 bfy=pny:bfx=-32-672*(bfd=-1):bk=-1
620 PLOT 0,0,6:tbf(1)=CHR$(249+3*(bfd=-1))+CHR$(247-(bfd=-1))
:tbf(2)=CHR$(249+5* (bfd=-1))+CHR$(245-3*(bfd=-1)):tbf=tbf(1):
MOVE bfx,bfy:PRINT tbf$;:EI:RETURN
630 '
640 '***INITIAL SET UP***
650 MODE 0:BORDER 7
660 DEFINT a-r:DEFREAL s-t:DEFSTR u-z:DIM tbf(2):sh=0:DEF FNu=
 "+STRING$(1,255)
670 s=0:l=5:bi=600
680 INK 0,2:INK 1,16:INK 2,12:INK 3,9:INK 4,24:INK 5,8,15:INK
 6,15,20:INK 7,0:IN K 8,12
690 '
700 '***U.D.G.s***
710 SYMBOL 255,0,0,88,52,88
720 SYMBOL 254,0,0,26,44,26
730 SYMBOL 253,140,222,247,127,255,222,140
740 SYMBOL 252,49,123,239,254,255,123,49
750 SYMBOL 251,142,223,244,120,252,223,142
760 SYMBOL 250,113,251,47,30,63,251,113
770 SYMBOL 249,3,142,221,126,127,223,143,3
780 SYMBOL 248,192,113,187,126,254,251,241,192
790 SYMBOL 247,224,248,126,255,255,254,248,224
800 SYMBOL 246,7,31,126,255,255,127,31,7
810 SYMBOL 245,255,250,104,192,192,232,250,255
820 SYMBOL 244,255,95,22,3,3,23,95,255
830 '
840 '***SET UP SCREEN***
850 pnx=304:pny=208:pd=INT(RND*2)*2-1:pnc=253+(pd=-1):poc=pnc:p
ox=304:poy=208:bfx=0:bfy=0:lfx=0:lfy=0:pm=0
860 TAG:PLOT 0,0,1:MOVE pnx,pny:PRINT CHR$(pnc);:TAGOFF
870 WINDOW #1,1,20,21,25:PAPER #1,2:PEN #1,3
880 CLS #1:PRINT #1:PRINT #1:PRINT #1," LIVES:    SCORE:";
890 WINDOW #2,2,9,24,24:PAPER #2,0:PEN #2,4:CLS #2
900 WINDOW #3,12,19,24,24:PAPER #3,0:PEN #3,4:CLS #3
910 GOSUB 50:GOSUB 80
920 loc=80:locy=56:sca=1:GOSUB 960:loc=464:locy=64:sca=1:GOSUB
 960:loc=240:locy=72:sca=0.5:GOSUB 960:loc=320:locy=48:GOSUB 960
930 PRINT CHR$(23)+CHR$(1);:TAG:GOTO 280
940 '
950 '***REEDS***
960 PRINT CHR$(23)+CHR$(0);
970 MOVE loc,locy:DRAWR -32*sca,120*sca,7:DRAWR 48*sca,-116*sca
:DRAWR -16*sca,128*sca:DRAWR 32*sca,-120*sca:DRAWR 0,128*sca:DR
AWR 16*sca,-124*sca:DRAWR 16*sca,124*sca
980 DRAWR 0,-128*sca:DRAWR 32*sca,120*sca:DRAWR -16*sca,-128*sc
a:DRAWR 48*sca,120*sca:DRAWR -32*sca,-124*sca
990 RETURN
1000 '
1010 '***END OF GAME***
1020 PRINT "    FINAL SCORE:":PRINT "      "+s;:SOUND 7,700,350,5
,1,1,0:FOR i=1 TO 6000:NEXT
1030 IF s>sh THEN sh=s:PRINT "  NEW HIGH SCORE!!":SOUND 7,300,4
00,2,2,0:FOR i=1 TO 6000:NEXT
1040 PRINT "    ANOTHER  GO?";CHR$(7);
1050 IF INKEY(46)=0 THEN END ELSE IF INKEY(43)<>0 THEN 1050 EL
SE CLS:GOTO 670
1060 '
1070 '***SOUNDS AND TITLES***
1080 MODE 0:INK 0,24:INK 1,1
1090 ENV 1,5,1,50,5,-1,20
1100 ENT 1,10,50,25,10,-50,10
1110 ENV 2,5,2,80
1120 ENT 2,5,-50,80
1130 ENT 3,5,4,4,5,50,5,5,4,2
1140 ENT 4,5,4,2,5,50,2,5,4,1
1150 SOUND 7,500,350,5,1,1,0
1160 FOR i=1 TO 5
1170 PRINT:PRINT CHR$(143)+CHR$(143)+CHR$(138)+CHR$(133)+CHR$(
214)+CHR$(131)+CHR$(138)+CHR$(133)+CHR$(133)+" "+CHR$(143)+CHR
$(139)+CHR$(138)+CHR$(135)+CHR$(133)+CHR$(143)+CHR$(215)+CHR$(1
33)+CHR$(143)+CHR$(215);
1180 PRINT CHR$(143)+CHR$(132)+CHR$(138)+CHR$(133)+CHR$(143)+CH
R$(143)+CHR$(138)+CHR$(143)+CHR$(133)+" "+CHR$(143)+CHR$(142)+C
HR$(138)+CHR$(133)+CHR$(133)+CHR$(143)+CHR$(213)+CHR$(133)+CHR$
(143)+CHR$(138);
1190 PRINT CHR$(143)+" "+CHR$(138)+CHR$(133)+CHR$(140)+CHR$(212
)+CHR$(138)+CHR$(133)+CHR$(133)+" "+CHR$(143)+" "+CHR$(138)+CHR
$(141)+CHR$(133)+CHR$(143)+"  "+CHR$(143)+CHR$(212);
1200 PRINT SPACE$(20);:NEXT
1210 FOR i=1 TO 2000:NEXT
1220 '
1230 '***INSTRUCTIONS***
1240 CLS:PRINT:PRINT "   INSTRUCTIONS?";CHR$(7);
1250 IF INKEY(46)=0 THEN 650 ELSE IF INKEY(43)<>0 THEN 1250
1260 MODE 1:PRINT "FISHPOND":PRINT:PRINT "You are a fish in a
 small pond and your":PRINT "aim is to eat fish smaller than y
ourself";:PRINT "and avoid those bigger than yourself."
1270 PRINT:PRINT "You automatically swim from one side of":PRI
NT "the pond to the other and back again":PRINT "repeatedly."
1280 PRINT:PRINT "You can play with joystick or keyboard.":PRI
NT:PRINT "Up and down joystick or cursor motion":PRINT "moves
 your fish up and down. The screen":PRINT "wraps around vertic
ally. The fire or"
1290 PRINT "copy key opens your fish's mouth":PRINT:PRINT "You
 score 10 for each fish eaten with":PRINT "100 bonus for every
 fifth fish.":PRINT:PRINT "(PRESS ANY KEY TO START)";CHR$(7);
1300 CALL &BB03:' EMPTY KEYBOARD BUFFER
1310 q$=INKEY$:IF q$="" THEN 1310 ELSE 650
```

Popular Poll Results

Unable to sleep at night? Does the time seem to have stopped still? Nervous? You must be waiting for the results of the first *Popular Computing Weekly* Readers' Poll . . . and here they are!

Game of the Year (overall)

There was never really much doubt over the winner of this one – **Knight Lore** from Ultimate was a clear favourite, polling just over a fifth of all votes cast.

Far more interesting was the battle for second place, between **Lords of Midnight**, **Elite** and **Jet Set Willy**. **Lords of Midnight** just made it. One wit nominated the Sinclair QL in this category.

1 **Knight Lore** *(Ultimate Play the Game)*
2 **Lords of Midnight** *(Beyond)*
3 **Elite** *(Acornsoft)*
4 **Jet Set Willy** *(Software Projects)*
5 **Ghostbusters** *(Activision)*

Arcade Game of the Year

One thing that can be learnt from the Poll results is that there is no such animal as a straightforward arcade game anymore. Games as diverse as **Mugsy** (Melbourne House) and **Match Day** (Ocean) were picking up votes here, as well as the more traditional arcade action of **Revenge of the Mutant Camels** (Llamasoft). In the end, Ultimate's followers decided **Knight Lore** was very much an arcade game.

1 **Knight Lore** *(Ultimate)*
2 **Jet Set Willy** *(Software Projects)*
3 **Elite** *(Acornsoft)*
4 **Daley Thompson's Decathlon** *(Ocean)*
5 **3D Star Strike** *(Realtime)*

Adventure of the Year

This was very much a two-horse race between **Lords of Midnight** and **Sherlock**, though **Jet Set Willy** and the inevitable **Knight Lore** did their best to count as adventures as well.

Incidentally, lots of people voted for **The Hobbit**, which we had to disqualify, because it's been kicking around for about two years now, and we did specify that programs should have been released during 1984. **Valhalla** suffered the same fate.

1 **Lords of Midnight** *(Beyond)*
2 **Sherlock** *(Melbourne House)*
3 **Return to Eden** *(Level 9)*
4 **Forest at Worlds End** *(Interceptor)*

Business Program of the Year

Business programs are obviously a very personal choice; either that, or very few '84 releases caught the imagination, since most programs nominated were only picking up a few votes each. The bundled QL software titles each gained a number of mentions, with the notable exclusion of *Archive*.

In the end, there was only one clear winner, **Tasword 2** (Tasman), backed up by a number of votes for **Tasword 464**.

1 **Tasword 2** *(Tasman)*

Peripheral of the Year

The best entry for this category, though unfortunately not the winner, was Ian Souter's nomination for the **QL 'Dongle'**. And, I suppose, if you have a QL, it was useful at the time, if only as a means of getting the computer at all.

Joysticks dominated this section, with **Quickshot II** proving the most popular.

1 **Quickshot II joystick** *(Quickshot)*
2 **Comcon interface** *(FREL)*
3 **Currah Microspeech** *(Currah)*

Utility Program of the Year

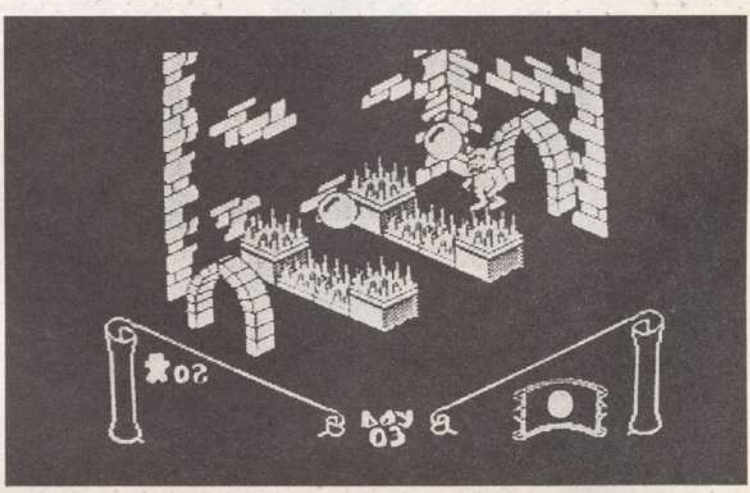
One of the clearest winners of them all, **The Quill**, by Gilsoft, finished with exactly twice as many votes as its nearest rival, Oasis's **White Lightning**. And, although **The Quill** was initially launched in late 1983, its vast number of votes seem to confirm it as a utility of 1984.

1 **The Quill** *(Gilsoft)*
2 **White Lightning** *(Oasis)*

Best Software House

Congratulations to the team at **W H Smith and Son**, who drew a couple of votes in this section (shurely shome mishtake?).

However, they couldn't catch **Ultimate**, who netted over 40% of the total



Popular Poll Results

vote in this category, although A. Dawson did point out that he wasn't too keen on the price of its games.

1 **Ultimate Play the Game**
2 **Beyond**
3 **Melbourne House**
4 **Level 9**
5 **Ocean**

Most Exciting New Computer

More funny entries here – whatever else you may think about the **BBC B** and the **Commodore 64**, they are not *new* computers. The **QL** and the **Amstrad CPC 464** were new this year, though, and between them, took two-thirds of the vote. The CPC464 won this section fairly comfortably.

1 **Amstrad CPC 464**
2 **Sinclair QL**
3 **ZX Spectrum +**
4 **Commodore Plus/4**
5 **Enterprise 64K**

Best Programmer

Matthew Smith appears to have proved that imitation is the sincerest form of flattery, as he was a clear winner. *Popular* readers – are evidently keen brand loyalists; this section attracted a lot of nominations (including one for Daley Thompson – no, I didn't know he could program, either).

1 **Matthew Smith** *(Manic Miner, Jet Set Willy)*
2 **Mike Singleton** *(Lords of Midnight, Doomdark's Revenge)*
3 **Tony Crowther** *(Loco, Potty Pigeon, Monty Mole)*
4 **Jeff Minter** *(Gridrunner, Revenge of the Mutant Camels, etc, etc)*
5 **The Ultimate team**

Most Promising New Company

Most of the categories produced clear winners, but not this one. Nine newish companies polled the vast majority of the votes (41 were voted for altogether) and any one of them could have won. Eventually, however – and it was probably something to do with *Lords of Midnight* – **Beyond** pulled clear.

1 **Beyond**
2 **Gargoyle Games**
3 **Gremlin Graphics**
4 **Mastertronic**
5 **Firebird**

Worst Computer

Everything, but everything, came in for stick here.

All the old favourites, the **Spectrum**, the **Commodore 64**, the **Beeb**, all got vilified alongside the poor **Dragon**, **Lynx** and **Jupiter Ace**.

But no machines were quite so disliked as the **MSX** micros.

1 **MSX computers**
2 **Dragon 32**
3 **Vic 20**
4 **Sinclair QL**
5 **ZX 81**

Program You Most Regret Buying

Another category in which winners rapidly became losers. **Jet Set Willy, Sherlock** *et al* were all slagged off by some. F. Senyszak declined to vote here, because "ever since Valhalla, I've been very careful." One person even dared to regret buying **Knight Lore.**

In short, nothing was immune, and 85 different programs were nominated. Suffice to say that **War of the Worlds** and **The Great Space Race** managed to tie for first position.

1= **Great Space Race** *(Legend)*
1= **War of the Worlds** *(CRL)*

Most Overrated Software House

Imagine may have disintegrated last summer but it certainly hasn't been forgotten – it won this category with remarkable ease for a company that no longer exists.

1 **Imagine**
2 **Ocean**
3 **Melbourne House**
4 **Automata**
5 **Elite**

Incidentally, Ultimate were in sixth place – you can win 'em all.

Worst TV Spin-off

At last, a section **Ultimate** couldn't possibly figure in. **Elite** (the software house, not the game) did its best to win this one, but made the mistake of releasing two games licensed from TV programmes, and so split the vote. Neil Gibson confessed that he actually *did* throw his copy of **Blue Thunder** at the wall.

1 **War of the Worlds** *(CRL)*
2 **Fall Guy** *(Elite)*
3 **Ghostbusters** *(Activision)*
4 **Blue Thunder** *(Foundry Systems)*
5 **Airwolf** *(Elite)*

Silliest Advertisment

Popular pollsters are a squeamish lot – "Atari's tongues – ugh!" was a frequent comment in this box, and the ugliness of **Mikro-gen's** Wally Week made some of you recoil.

But there was no doubt about the winners of this category – yep, folks, it's the soaraway Automata comic strip (just turn to the back page of this magazine).

1 **Automata comic strip**
2 **Atari 'tongue'**
3 **Automania**
4 **Commodore's elephant in the boxing ring**
5 **Pyjamarama**

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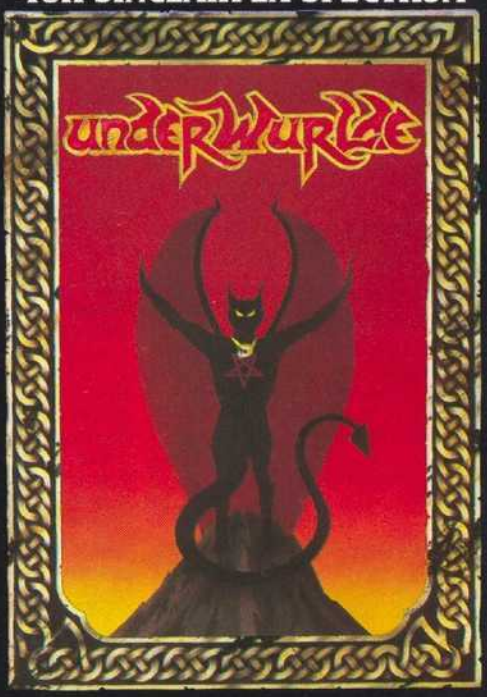

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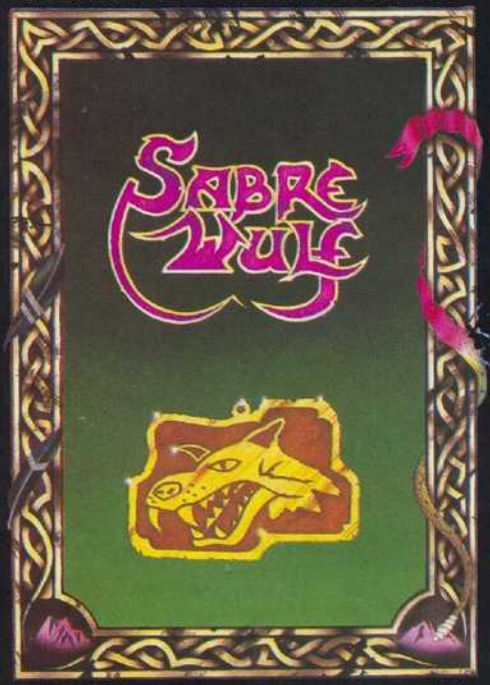
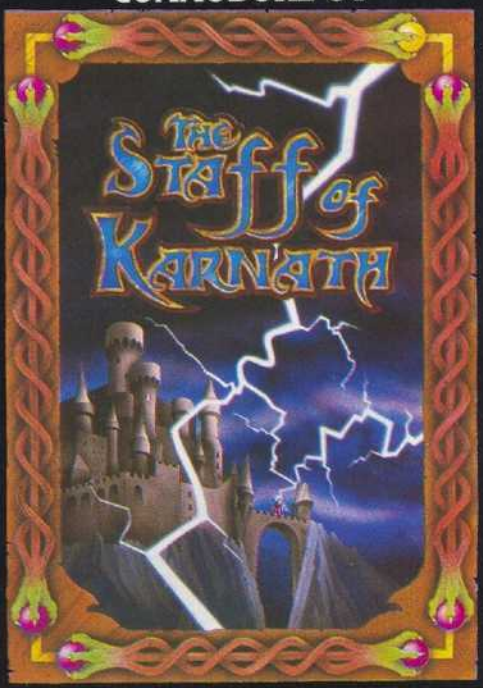


COMMODORE 64



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Personal computer games

***Graham Taylor** goes in search of the perfect computer match at Dateline*

Let's face it, with a few exceptions, most of our daily contact with 'real' computers is at best dull and all too often, utterly infuriating. Nasty pseudo personalised letters, cash machines out of cash, purveyors of beauracratic blunders – all this and more. Unfortunately, it often seems that all the things computers are good at inevitably places them amongst the least interesting areas of human existence.

However, one of the most successfully computerised services of all lies in quite a different realm. For thousands of people a year the computer is the stuff of dreams, of hope, of, let us not baulk at the word . . . romance. At Dateline, a PDP 11/34 with two Winchesters takes the place of discos, nightclubs, pubs, cafes, restaurants, friends houses, parties, etc, and introduces people of different sexes to one another, having used its processing power to ensure that each pair starts with something in common and no major impediments.

Dateline is intended for all those people who never did meet people in the kinds of places mentioned above, or who are divorced, or for some other reason feel lonely at one time or another. Strange as it may seem, a wide range of perfectly normal people use the service; some just have a good time, some get married, some make friends. It beats mail shots, VAT calculations, purchase ledgers, and spreadsheets as 'things' you can do with real computers anyway.

The idea of computer dating came from America, but Dateline was set up in 1966 – it was the first and is now the biggest company of its kind in this country. Current membership is over 30,000, with around 1,000 new members each month. Numbers fluctuate as members leave the system having met someone or simply lose interest. Factors like the time of year (December is bad, January is good as people look forward to a good time at Christmas, don't have it and then decide to do something about it) also have an effect, but one thing is clear – the numbers are getting bigger.

One of the most consistent criticisms of Dateline and organisations like it, is that the computer is merely a gimmick designed to lend what is little more than chance a spurious scientific appearance. I went along to Dateline to discover what it is, exactly, the computer does, if anything.

At Dateline's offices in London hundreds of enquiries arrive from hundreds of people in response to £400,000 worth of advertising in various magazines and the national press. These are typed into the computer and each person is sent details of the service. The details include a fairly extensive questionnaire in which you describe yourself and the kind of person you want to meet. This is where it starts getting computeresque.

The form consists of eight sections, yourself, what kind of person you want to meet, your personality, your relationships, your lifestyle, your work, your interests and finally a picture test. Let's deal with the last first and give the cynics something to munch on.

"How does the computer evaluate the results of something as abstract as that?" I asked Pauline Chandler, Dateline's PR person. She declined to take the rap for that one. "I'm always telling them to take that one off but apparently it's there just because some people like to do such tests – they enjoy them."

"So it isn't actually used for anything at all?"

"No – our psychologist says if someone was having problems finding a successful match he'd have a look at it, but I can't help feeling that's basically flannel."

Having removed question eight from our consideration, it is possible to see how the rest of the questionnaire works. In the first section you describe yourself by marking a 1 in appropriate boxes, there are different categories for skin colouring, attractiveness, smoking, drinking, education, school, religion, politics, build, etc, and thus the computer gets a broad description of what you are like.

In the next section, using 1's and 0's or by leaving the box blank, you build up a picture of the kind of people you want to meet.

The other sections involve indicating, within each topic, which statements you agree with, disagree with, or are indifferent to. The statements include such things as "I'm good at drawing people out when talking", "I like friends who challenge my views", "I like to dress conventionally" and were chosen and developed with a psychologist.

It can hardly have escaped your notice that all these O's and 1's, along with the spaces, represent a form of binary language – prime computer stuff - and thus when all this information is typed into the computer, it holds a fairly large amount of information in a simple way.

When you've paid your money, you are sent the results of a 'run' through the computer which means that your information has been compared with information from all the other people held on file and where there is a match this is printed out. You are sent the names and addresses of all the suitable people – around six on average.

What the computer does is compare the information on each person, excluding anyone who falls into one of the 'definitely do not want to meet' category. If people aren't automatically excluded, then the answers to the statements are compared and a reasonable correlation sought. This section isn't as strict in that a reasonable percentage of compatability is what's required. Questions are more subtle here; after all, if you agreed with "I prefer someone else to make the decisions" you don't want to meet someone who also agrees with that. By comparing the data and checking for exclu-

sions, someone who on paper meets your requirements can be discovered with a percentage figure for the degree of agreement.

Actually, it can sometimes be more subtle than that – some people may find they are getting few or even nil matches. The computer can be interrogated to see what exclusion(s) are causing the problem; eg, it might be discovered that someone would substantially increase their chances of a match by dropping their insistence that nobody who drinks should be selected. The company would write to the person and suggest the compromise.

So the computer isn't a gimmick. Like most computers, it's essentially doing something which is fairly simple and could be done by humans, but with the amount and complexity of information involved the job would be impossibly time-consuming.

The man responsible for making the computer work and developing the system is John Gingall. He has that enthusiasm and vague sense of other worldliness that marks real computer programmers. I talked to him about the system.

"When I joined the company, the system was already developed – it was specially designed for the purpose although it's been modified in various way since then," he explained. The program, perhaps suprisingly, is written in a mixture of Basic plus and Basic plus II with some Macro II for the actual matching operation and all the information is stored on two Winchesters.

"Each one has room for 168 megabytes – in fact we could probably squeeze the whole system onto one Winchester, but the run time would just get too slow." Looking at the actual screen onto one of the numerous terminals (the system operates on a resource sharing, time sharing basis), I noticed a replica of the questionnaire layout complete with 1's and O's and the remark NB Holding Block 6974 on channel 3. This, it emerged, meant that some information on this file was being kept back.

John explained, "Some parts of the file are kept back by the system because it simply cannot hold everything at once. There are vast numbers of files holding different bits of data and this reminds us to be careful when updating. If someone were to access the same file and change an address, for example, and then we sent the file we are currently looking at back into the system, the old address would rewrite the new address."

Talking of potential disasters, I asked whether (as computers are wont to do) the system ever broke down? "Oh yes, these days we make copies of everything two or three times as week, but it's not uncommon to lose half a day's work."

The actual system has grown in all sorts of ways only indirectly related to the business of helping people meet one another. One problem is the balance of the clientele; young women, in particular, are usually lacking. "We can advertise special offers to try and get particular sections of people we need more of. By putting the ads in an appropriate magazine we try to keep the balance right."

This has led to a fairly thorough analysis of the exact response from each magazine. "Using the computer to analyse the results of the coupons we have received, we can discover things like cost per person of the ads, balance of sexes, ages, etc, and put out advertising where it'll be most effective in terms of getting the people we need."

As you can see, the system has actually become pretty sophisticated over the years and some people might not like the idea that something so emotive and complex as human relationships should be treated in such a way. But Dateline is pretty successful at what it does and in the end all the computer does is start you off.

As Pauline Chandler put it: "All the computer does is give you the name, address and telephone number of someone who shares at least some of your interests and who has none of the factors that automatically put you off – it's up to you to make the phone call."

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NOTE WE HAVE MOVED TO NEW PREMISES

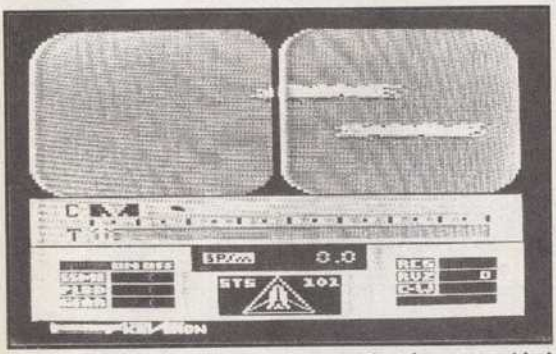
In Orbit

Program *Space Shuttle* **Micro** Commodore 64 **Price** £9.99 **Supplier** Activision (UK) Inc., 15 Harley House, Marylebone Road, London NW1.

Simulations may come and go, but *Space Shuttle* is likely to be around for a long time. Mind you, it's not a fast-action, laser-firing shoot-out, but the highly complex flight manoeuvres can get a bit hectic at times.

pages packed with screen dumps, diagrams and photographs, provide background information and instructions. Another good feature of the simulation is the ability to use auto-simulation and simulation modes before you try the fully-fledged flight.

In the auto-simulation, the computer demonstrates most of the action and takes control, so that you don't have to use the keyboard. On the simulation mode, you get a chance to handle all the controls, but you don't have a time limit, nor any fuel problems.



As pilot of the space shuttle Discovery, you are required to rendezvous with an orbital satellite, 210 miles above the earth. This is straightforward enough, in theory. In practise, the launching sequence, stabilising the orbit, docking procedures, do-orbit burns, re-entry to the earth's atmosphere and landing all have to be mastered.

Fortunately, the flight manual is very good: 31 glossy

Activision have provided superb graphics for *Space Shuttle* – the cockpit vibrations during the launch sequence really give the impression of taking off. The roar of the engines is quite realistic, too. This simulation is a certain winner and should be in any flying freak's collection of games.

Tom Hussey

Satirical

Program *Return of the Joystick* **Price** £4.95 **Micro** Spectrum 48K **Supplier** Delta 4 Software, The Shieling, New Road, Swanmore, Hants SO3 9PE

Deep in his dungeon our hero stirs. A loud thud heralds the morning's post. "Three hundred more *Manic Willy* clones for review,' he grumbles. . . but wait, here's an adventure which lays open the computer games world, featuring several software company headquarters and (gulp) even the hallowed portals of 'PCW'!

Is there a mole in Sunshine Towers? Where is the Golden Joystick? Will the review ever start?

Yes, *Return of the Joystick* is a 'Mad' magazine style spoof on all that we love and cherish in this micro world – deduction, daring and late delivery dates. It features the

stars of computing (and none so bright as Sunshine and can I have a raise now?) in a lively, clever and nonsensical satirical chase, though how funny you find it will depend on how well you know the names. Those who've been trapped in the Goblin's Dungeon or been to a Microfair should at least smile.

Interestingly, it is not only imaginatively Quilled but must also be one of the first commercial games to have used Gilsoft's *Illustrator*, and in doing so sets a high standard (though even a graphic cannot capture the true horror of Sunshine Towers). It's a bargain, so buy it and you too can experience the thrill of meeting Graham Taylor.

John Minson

Exciting

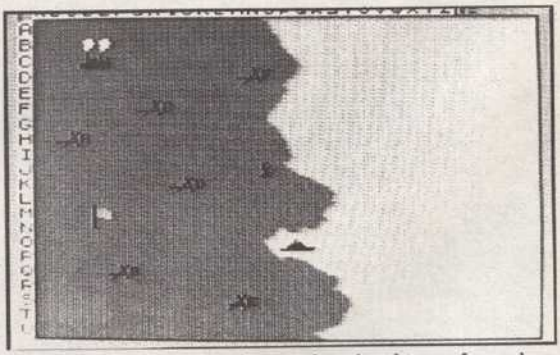
Program *Air Defence* **Price** £5.95 **Micro** Spectrum 48K **Supplier** Cases Computer Simulations, 14 Langton Way, London SE3 7TL

CCS dominate the wargame market and their new offering has much to attract both experienced players and relative newcomers as it offers five levels of difficulty. Quite simply you command air defences for a coast line, guarding industry, airfields, radar, etc, and scrambling squadrons of fighters, early warning planes and tankers while enemy bombers attack from the east.

two displays; a map and a record of plane status which handles most of the bookkeeping, though you may still need to jot down details before allocating planes from the map.

One common grumble about wargames is that they're slow. Not this one! Time segments tick away alarmingly and you must be prepared because when the invasions starts you hardly have time to think. There is a pause control though for those of a nervous disposition (and cheats).

Air Defence is challenging and exciting to play despite its complexity, and has the rare advantage of being a single player game. It's price is reasonable too. I do find the clinical nature of the whole-



Quite simply, I say, but keeping your planes airborne is rather like juggling, as they tend to return to base for refuelling just when they're needed. You have

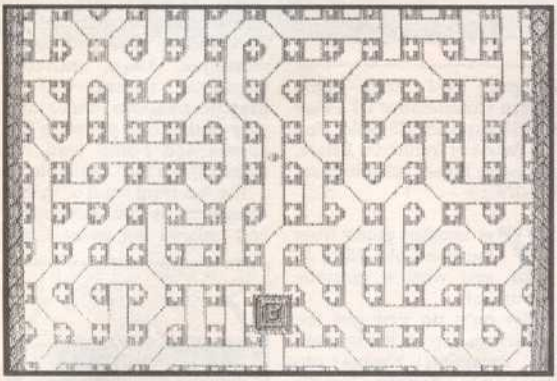
sale slaughter of modern warfare frightening though, even if it is only a game.

John Minson

Irritating

Program *Rollerball* **Micro** Amstrad CPC464 **Price** £6.95 **Supplier** Timeslip Software, Stoneyburn Workshops, The Old Primary School, Main Street, Stoneyburn, West Lothian, Scotland.

This is not only a difficult game to classify it is also a difficult game to play. It is basically a computerised puzzle rather than an arcade game. You are presented with an interlocking maze of tracks along which a



ball slowly rolls obliterating all the pieces it has passed over. You play the difficult part of a large square thing that moves around on top of the tracks and that can change the way that they interconnect at the various junctions. The idea is to rearrange the layout so that the ball never reaches the edges or hit an area that it has already wiped out.

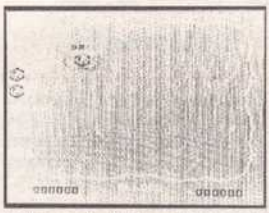
Nothing wrong with that, but it is complicated by the fact that the square thing is controlled by the cursor keys which for some reason work in the opposite directions to which they are supposed to. If this is deliberate it doesn't add to the difficulty but just makes it more irritating. I also found that it was very hard to predict or control the way the tracks are rearranged and you very easily get into a situation where there is nothing useful you can do to the ball. Basically a nice idea that doesn't quite work for me. There is also the option of having invisible tracks.

However, extra bonus marks to Timeslip for some very cheerful and user friendly intro and finish screens and some very bouncy music.

Tony Kendle

Zap-away

Program *Homebase* **Price** £6.95 **Micro** Dragon 32 **Supplier** Cable Software, 52 Limbury Rd, Luton, Beds LU3 2PL



This is a straightforward arcade 'Zap-the-aliens' game. The player is in an irregular shaped field of play called The Laserdome, which he shares with hostile laser balls. The object is to zap the laser balls whilst avoiding contact with them or with the sides of the laserdome. Contact with the sides is lethal and with the laserballs is energy draining.

Once a screen is cleared, the player is returned to the protective 'homebase' whilst the screen is filled by the next wave. The homebase can also be used as a refuge once per game.

The game has a two player option – that is, two players can each play a game individually and their scores are compared. Control is by joystick, with the two player option working from two joysticks.

Two small points. If two players are connected, the "non-player" can sabotage the player by pressing his fire button which disables the player. Also, the resetting of the homebase seemed to be faulty after each alternate game when I played it.

In summary, *Homebase* is a simple arcade game, without either special qualities or demerits, but it looks a little old fashioned and expensive by current standards.

Derrick Trueman

Zut alors!

Program *Clue's 'O'* **Price** £8.95 **Micro** Spectrum 48K **Supplier** Imperial Software, Imperial House, 153 Churchill Road, Poole, Dorset.

Maintenant I think I have the answer, but premier let moi review les facts. Je suis un famous French detective (which is why je parle en franglais) qui est investigating le murder de Major Fawcett dans cette adventure. I have promenadé all over Chez Fawcett; upstairs, downstairs at dans la chambre de my lady. I have questioned les suspects, collected des clues et even answered le flipping telephone.

La famille Fawcett sont un nutty bunch. Madame says les plus strange things et le gardener pinches le spade. They avoir une plus grande maison avec many rooms.

Mais, vous say, qu'est que votre judgement? Well, mes petits cauliflowers, je pense that un detective adventure game est un damn good idea, et while je suis no Sherlock (et neither is this game) c'est un grand lot of fun to investigate and deduce rather than tuer les dragons. There's un lot to do before you can name le suspect et, murder weapon.

Le program est entertaining avec des humorous responses et les reaction times sont quite fast, mais ce n'est pas 'state du art' et therefore j'accuse the price of preventing it from being un bon buy.

John Minson

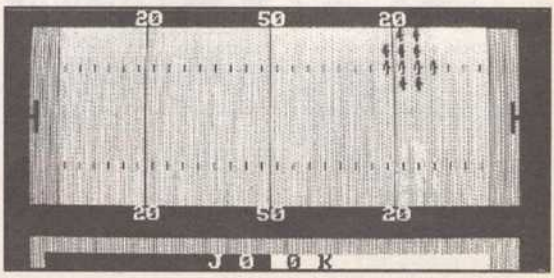
Incomplete

Program *American Football* **Micro** Amstrad CPC 464 **Price** £8.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex.

This is a conversion of the game of the same name for the Spectrum by Argus Press. Inside comes a booklet which aims to give you a crash course in the rules, tactics and terminology of American Football but, fortunately, although interesting and useful if watching Channel 4, most of this can be ignored if you just want to get on with the game. On screen is a top down view of the pitch, or 'the field' to those in the know, on which the teams run around in effective, if small, animation. Play is controlled by typing in your choice of tactic at any one time from the menu of defensive or offensive moves available. Your opponent, which can be the 464, then decides upon their move and the computer works out the resulting action without, we are assured, cheating. I don't intend to precis the full rules here but if the offensive team doesn't get the ball more than ten yards down the field in four tries the ball passes to the other side.

Initially very enjoyable as a sporting strategy/simulation, especially as a two player game, but ultimately there is not enough to it to merit top marks. Perhaps some sort of league table, as in *Football Manager*, would have greatly increased longevity of interest. The graphics are also too limited. I know it's not trying to be on a par with Commodore's *International Soccer* but at least they could have included a ball on the screen.

Tony Kendle



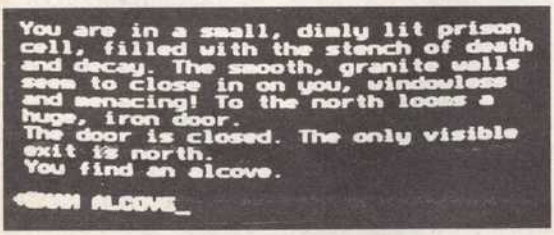
Marooned

Program *The Island of Xaan* **Price** £7.95 **Micro** BBC B **Supplier** Robico Software, 3 Fairland Close, Llantrisant, Mid Glamorgan CF7 8QH

Robert O'Leary has come up with a colourful text adventure with a slightly unusual scenario. You start in Xaan's jail cell and have to escape, adopt a suitable disguise and finally make your way off the island.

The locations are described in plenty of detail – and as a boon the spelling is pretty fair too!

Hints in the text that are well worth noting extremely carefully – for example, when you escape from the cell you're warned that you are freezing cold. If you don't find and wear a cloak pretty quickly – well, you can't say you weren't warned. The package comes complete with a notebook for you to keep track of your wanderings.



The game has most of the familiar puzzles of adventures including a twisty maze where reversing direction may not get you back to where you began!

Seasoned adventurers may find the routine a little predictable, but there's plenty to enjoy on *The Island of Xaan* for newcomers.

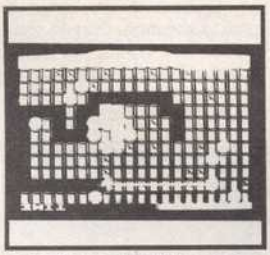
Jan Watterson

Drunken

Program *Quack a Jack* **Micro** Amstrad CPC464 **Price** £8.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex.

Quack a Jack is based loosely on situations and characters in the fantasy role playing game *Fandonia* by Steve Cox" it says on the cassette inlay. What *are* they on about? It is just a version of that old arcade game called *Timebomb* or something similar on various micros. It involves jumping about from tile to tile on a screen trying to reach a bomb (in this case a Terradactile's egg) before it goes off (or hatches). Wherever you have walked the tiles disappear and it thus becomes harder to find your way about but you can scroll any row of them from side to side and make use of the wraparound screen. To complicate things, there are static hazards to negotiate.

It is only the viciousness and originality of forms that the monsters take that give this Amsoft game any sort of an edge over the other versions. Here you begin with vampire rabbits and proceed to go through 16 different levels including such wonders as drunken prawns and space hoppers. I did think, however, that the inclusion of a little music would not have gone amiss. On the whole it is a pretty reasonable version of



a pretty reasonable game – but there's plenty of better things to spend your money on.

Tony Kendle

Infra-red

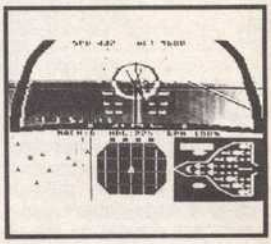
Program *F-15 Strike Eagle* **Micro** Commodore 64 **Price** £14.95 **Supplier** US Gold, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham B7 4LY

Yet another game from the good old US of A, and what a patriotic one at that!

Not only do you get the American flag on the screen, the computer churns out tunes like *Yankee Doodle Dandy* and the American national anthem while it's loading.

That apart, *F-15 Strike Eagle* is, in fact, a very sophisticated flight simulation. Not only do you have to fly the F-15, you also have to manage its information and weapons systems. F-15 also simulates the modern air combat environment with numerous enemy aircraft, radar-guarded missiles, infra-red missiles and ground targets. Fortunately, the pilot is assisted by an impressive array of computer-controlled information display systems. These include a "heads-up" display which projects target and threat tracking information, navigational cues and status messages. Maps, variable resolution radars and a graphic weapons' status display (a diagram showing the missile and bomb load remaining) are also available.

The 'up-front control' in this simulation is the keyboard, and believe me when I say



that, while a joystick is used as the control stick, almost every key can be used to activate something or other – you can even bail out.

Anyone prepared to spend time getting used to the aircraft controls should certainly enjoy this complex simulation. Not a game for 'amateur' pilots, though.

Tom Hussey

Torment

Program *Fantasia Diamond* **Micro** Amstrad CPC464 **Price** £7.95 **Supplier** Hewson Consultants Ltd, Hewson House, 56B Milton Trading Estate, Milton Abingdon, Oxon. OX14 4RX.

A straight conversion from the deservedly successful Spectrum adventure, *Fantasia Diamond* is guaranteed to give 464 users a pretty rough time over the next few months. It is a fiendishly difficult graphic adventure which owes a lot to Melbourne House's classic *Hobbit* in that it features independent characters 'each with his own life and personality and who will help or hinder you depending on how they feel at the time'.

I think I'm right in saying that this is the first adventure to be released for this micro that features these self determinant beings and for that reason alone it should do well. For those who are unfamiliar with this type of game you will be faced with baffling hours of watching people arriving or going south for no apparent reason.

It should be obvious that this is pretty sophisticated stuff and the vocabulary range and language phrasing are also highly advanced with the option of typing in full sentences of commands. Graphics are very large and colourful, although a bit square and blocky, and they draw very very quickly indeed. The plot is suitably unlikely and I'm not going to repeat it – suffice to say you have to retrieve the diamond.

It would be doing this adventure an injustice to pretend that I've come anywhere near solving it or know all its secrets as I'm sure there are weeks, months even, of mental torment ahead for me. Very highly recommended.

Tony Kendle

Eureka!

DOMARK

Dear Reader

16th January 1985

You've probably heard all about **Eureka!**, the '5 games in one' graphic adventure written by Ian Livingstone with a £25,000 prize. No one has yet won it although many of you are extremely close.

The storylines travel through five time zones of our history - Prehistoric, Roman Empire, Medieval Britain, Colditz and the Caribbean, where you come face to face with the evil Hugo Von Berg. He is holding us all to ransom and demands to be made Emperor of the World, otherwise he will destroy it. A secret telephone number direct to the British Prime Minister has been specially installed for you to ring when you have worked out the secret code which will save us all. You must find this code and decipher the telephone number.

The **Eureka!** Hotline number is:

01-460 1115

Ring this at any time to witness Von Berg's evil progress and to check that the prize is still available.

We wish you all the best of luck in your search and to help you on your way, will send you a FREE Guide to Adventure Games (no clues to the £25,000 though!) if you send in a stamp plus your name and address to us.

Happy searching!

Mark Strachan Dominic Wheatley

Managing Directors

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Eureka!

COMMODORE 64

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Shades of grey

Ever wanted a really big copy of your favourite screen? Try this m/c utility for Spectrum 48K by ***A S Burnham***

This is a machine-code routine which produces a 15×10 inch screen copy, in four strips, with colour represented as shades of grey.

To use it, either type in the assembly listing into an assembler, or use the decimal loader to input the machine-code bytes. Save it using, *Save "Big Copy" Code 30000,320.* To produce the copy, load the desired picture to the screen, and type *Randomise Usr 30000.* Once the printer has finished, tear off the paper and paste the sections together on card for the best results.

The routine works by looking at each pixel in turn, and representing it as a shaded block of 4×4 pixels on the printer, using its *Ink* or *Paper* colour to determine the shade.

Assembler Notes

20-30	Set store of screen and attribute file.
40-110	Store nested loops – 4 columns each with 192 screen rows, each consisting of 8 bytes across, each byte in 2-pixel sections.
120-170	Take far left-hand pixel, and decide whether it is set or reset.
180-290	If set, use Ink colour. If reset use paper colour.
300-320	Take right hand pixel, and decide whether it is set or reset.
220-410	If set use Ink colour. If reset use paper colour.
420	Work out shade of grey from data.
430	Put data into printer buffer for printing.
440-710	Shift round byte to expose next two pixels and complete loops.
720-770	Output to printer.
780-990	Shift down a screen row, and then across the four columns.
1000-1570	Subroutines.
1580-1650	Data for printer shades.

```
  1 REM Decimal loader
  2 REM
  3 REM Use this to input
        Machine-Code bytes.
  4 REM
 10 CLEAR 29999
 20 FOR f=30000 TO 30320
 30 INPUT (f),i
 40 PRINT f,i
 50 POKE f,i
 60 NEXT f

Machine-Code bytes:
30000: 243 17 0 88 33
30005: 0 64 6 4 14
30010: 192 197 229 213 221
30015: 33 0 91 6 8
30020: 14 4 126 197 245
30025: 79 203 121 121 40 11
30030: 26 230 7 205 218
30035: 117 205 235 117 24
30040: 15 26 203 63 203
30045: 63 203 63 230 7
30050: 205 218 117 205 235
30055: 117 203 113 40 11
30060: 26 230 7 205 218
30065: 117 205 11 118 24
30070: 15 26 203 63 203
30075: 63 203 63 230 7
30080: 205 218 117 205 11
30085: 118 221 35 241 7
30090: 7 193 13 32 184
30095: 19 35 16 177 209
30100: 225 193 121 197 229
30105: 230 7 254 1 32
30110: 6 1 32 0 235
30115: 9 235 225 229 213
30120: 33 0 91 6 4
30125: 197 205 244 14 193
30130: 16 249 62 4 211
30135: 251 209 225 213 205
30140: 39 118 209 193 13
30145: 194 59 117 197 1
30150: 248 2 175 235 237
30155: 66 235 1 216 23
30160: 175 237 66 193 5
30165: 194 57 117 251 201
30170: 71 4 253 33 87
30175: 118 253 35 253 35
30180: 253 35 253 35 16
30185: 246 201 221 229 213
30190: 6 4 253 126 0
30195: 203 39 203 39 203
30200: 39 203 39 221 119
30205: 0 17 32 0 221
30210: 25 253 35 16 233
30215: 209 221 225 201 221
30220: 229 213 6 4 253
30225: 126 0 221 86 0
30230: 178 221 119 0 17
30235: 32 0 221 25 253
30240: 35 16 237 209 221
30245: 225 201 124 230 7
30250: 254 7 40 2 36
30255: 201 125 230 224 254
30260: 224 40 7 17 224
30265: 6 167 237 82 201
30270: 124 254 87 200 17
30275: 32 0 25 201 15
30280: 15 15 15 7 13  30305: 4 0 0 0 0
30285: 7 15 10 13 7   30310: 0 0 0 0 0
30290: 13 13 10 5 11  30315: 0 0 0 0 0
30295: 10 5 10 5 5    30320: 0 0 0 0 0
30300: 2 8 2 2 0      30325: 0 0 0 0 0
```

```
L 0 10000 1000
00000 ;ZEUS ASSEMBLER LISTING
00001 ;
00005         ORG 30000
00010         DI
00020         LD DE,22528 ;Attrs.
00030         LD HL,16384 ;Screen
00040         LD B,4 ;Columns
00050 NCOL    LD C,192 ;Rows
00060 NROW    PUSH BC
00070         PUSH HL
00080         PUSH DE
00090         LD IX,23296 ;P.Buff
00100         LD B,8 ;No.of scans
00110 NBYTE   LD C,4 ;2 Pixels
00120         LD A,(HL) ;Get byte
00130 N2BIT   PUSH BC
00140         PUSH AF
00150 BIT0    LD C,A ;Left-hand
00160         BIT 7,C ;Bit 1 or P
00170         JR Z,PAP0
00180 INK0    LD A,(DE) ;Work out
00190         AND 7 ;shade
00200         CALL CALIY
00210         CALL DATPB0
00220         JR BIT1
00230 PAP0    LD A,(DE) ;Get attr
00240         SRL A
00250         SRL A ;Divide by 8
00260         SRL A ;for Paper
00270         AND 7
00280         CALL CALIY
00290         CALL DATPB0
00300 BIT1    BIT 6,C ;Repeat for
00310         JR Z,PAP1 ;Right-
00320 INK1    LD A,(DE) ;hand bit
00330         AND 7
00340         CALL CALIY
00350         CALL DATPB1
00360         JR END
00370 PAP1    LD A,(DE)
00380         SRL A
00390         SRL A
00400         SRL A
00410         AND 7
00420         CALL CALIY
00430         CALL DATPB1
00440 END     INC IX
00450         POP AF
00460         RLCA ;Rotate A to
00470         RLCA ;work on next
00480         POP BC ;two bits
00490         DEC C
00500         JR NZ,N2BIT
00510         INC DE
00520         INC HL
00530         DJNZ NBYTE
00540         POP DE
00550         POP HL
00560         POP BC
00570         LD A,C
00580         PUSH BC
00590         PUSH HL
00600         AND 7
00610         CP 1
00620         JR NZ,MI55
00630         LD BC,32
00640         EX DE,HL
00650         ADD HL,BC
00660         EX DE,HL
00670 MI55    POP HL
00680         PUSH HL
00690         PUSH DE
00700         LD HL,23296
```

```
00710          LD B,04
00720 COPY1    PUSH BC
00730          CALL #0EF4;ROM copy
00740          POP BC     ;routine
00750          DJNZ COPY1
00760          LD A,04
00770          OUT (#FB),A;Printer
00780          POP DE     ;off
00790          POP HL
00800          PUSH DE
00810          CALL 50;Down a scan
00820          POP DE
00830          POP BC
00840          DEC C
00850          JP NZ,NROW
00860          PUSH BC
00870          LD BC,760
00880          XOR A
00890          EX DE,HL
00900          SBC HL,BC
00910          EX DE,HL
00920          LD BC,6104
00930          XOR A
00940          SBC HL,BC
00950          POP BC
00960          DEC B
00970          JP NZ,NCOL
00980          EI
00990          RET
00995 ;Routine to calculate
00996 ;shade and point IY to it
01000 CALIY    LD B,A
01005          INC B
01010          LD IY,DATA-4
01020 BACK     INC IY
01030          INC IY
01040          INC IY
01050          INC IY
01060          DJNZ BACK
01070          RET
01075 ;Routine to store shade
01076 ;data in Printer Buffer
01080 DATPB0   PUSH IX
01090          PUSH DE
01100          LD B,4
01110 PROW     LD A,(IY)
01120          SLA A
01130          SLA A
01140          SLA A
01150          SLA A
01160          LD (IX),A
01170          LD DE,32
01180          ADD IX,DE
01190          INC IY
01200          DJNZ PROW
01210          POP DE
01220          POP IX
01230          RET
01240 DATPB1   PUSH IX
01250          PUSH DE
01260          LD B,4
01270 PROX     LD A,(IY)
01280          LD D,(IX)
01290          OR D
01300          LD (IX),A
01310          LD DE,32
01320          ADD IX,DE
01330          INC IY
01340          DJNZ PROX
01350          POP DE
01360          POP IX
01370          RET
01375 ;Down a scan in screen
01376 ;memory  VERY USEFUL
01380 50       LD A,H
01390          AND 7
01400          CP 7
01410          JR Z,ENLI
01420          INC H
01430          RET
01440 ENLI     LD A,L
01450          AND #0E0
01460          CP #0E0
01470          JR Z,ENSE
01480          LD DE,#08E0
01490          AND A
01500          SBC HL,DE
01510          RET
01520 ENSE     LD A,H
01530          CP #57
01540          RET Z
01550          LD DE,#0020
01560          ADD HL,DE
01570          RET
01575 ;Data for each shade,from
01576 ;White to Black (4x4)Bits
01580 DATA     DEFB 15,15,15,15
01590          DEFB 7,13,7,15
01600          DEFB 10,13,7,13
01610          DEFB 13,10,5,11
01620          DEFB 10,5,10,5
01630          DEFB 5,2,5,2
01640          DEFB 2,0,4,0
01650          DEFB 0,0,0,0
```

The writing's on the wall...

The introduction of MSX Basic has quite simply revolutionized the use of home computers. From today most of the languages in common use will fade into the brickwork.

Up until now home computers have used different machine languages, so that games and peripherals have been totally incompatible, but the introduction of MSX Basic will allow all products to run on any of these new machines. The implications are awesome.

Such a milestone in computer development deserves an equally innovative book. And not surprisingly it's published by Penguin.

MSX BASIC REVEALED gives the reader vital programming skills for MSX, and a detailed examination of its potential uses. It is one of the first books in the field and is certainly the very best.

When you realise that present day language systems have had their chips, you'll realise the need for MSX BASIC REVEALED.

by Robert Palmer and Ian Richards £6.95

Bits and pieces

*A traditional puzzle for the BBC B and Electron from Messers **J** and **R Wright** of Pro-Supply Ltd*

This is a program for the Electron or BBC B in which a traditional 'sliding-block' puzzle is created. On running the program, the computer will draw a scenic picture of a castle on a hill with one blank space; then on your command proceeds to jumble it up on a four by four grid.

When the computer has finished this task, a white outline will appear around one of the blocks. You move this outline about the grid using the cursor keys; its function being to nominate the particular block you wish to be 'slid' into the blank position, (to do this you press *Return*).

Upon exasperation, press *Escape* to restart the program. It's tougher than it looks. . .Good Luck!

```
 10 ON ERROR GOTO 1300
 20 MODE2
 30 PROCassemble
 40 PROCpic
 50 PROCplay
 60 END
 70
 80 DEFPROCpic
 90 COLOUR6:PRINTTAB(3,5)"SLIDING-BLO
    CK"TAB(7,7)"PUZZLE"
100 COLOUR1:PRINTTAB(2,12)"By J & R
    Wright"
110 COLOUR5:PRINTTAB(0,22)"(C) Pro-
    Supply Ltd."
120 G=INKEY(1000):CLS
130 VDU23,254,0,224,152,24,7,1,0,0
140 VDU23,255,&707;&707;7;0;
150 VDU24,320;256;960;896;
160 GCOL0,134:CLG
170 GCOL0,3
180 PROCCIR(880,816,32)
190 GCOL0,4
200 MOVE 448,712:DRAW448,800:DRAW560,
    800
210 DRAW560,776:DRAW708,776:DRAW708,
    800
220 DRAW820,800:DRAW820,712
230 VDU5:FORA%=408 TO 504 STEP 32
240 MOVEA%,816:VDU255
250 MOVEA%+256,816:VDU255
260 MOVEA%+112,792:VDU255:NEXT
270 MOVE648,792:VDU255,4
280 FORA%=712 TO 800 STEP 4
290 PLOT77,552,A%:PLOT77,808,A%
300 NEXT
310 GCOL0,0
320 FORA%=0 TO 256 STEP 256:VDU29,A%;
    0;
330 MOVE 480,720:DRAW480,748
340 DRAW496,764:DRAW512,764:DRAW528,
    748
350 DRAW528,724:NEXT:VDU29,0;0;
360 GCOL0,2:PROCCIR(640,16,720)
370 MOVE0,576:GCOL0,0:DRAW1280,576
380 GCOL0,128
390 FORY=0 TO 5 STEP 0.25:MOVE328,480
    -(Y*16):DRAW952,500-(Y*16):NEXT:GCO
    L0,7:FORY=0 TO 5:MOVE328,480-(Y*16)
    :DRAW952,500-(Y*16):NEXT
400 FORY=480 TO 400 STEP-4:X=328:B=0:
    REPEAT:FORZ=1 TO 2:PLOT69,X,Y+B:X=X
    +40:NEXT:B=B+3.3:UNTILB>30:NEXT
410 FORY=0 TO 3 STEP0.5:GCOL0,1:MOVE
    328,400-(Y*16):DRAW952,420-(Y*16):G
    COL0,3:MOVE328,400-((Y+0.25)*16):D
    RAW952,420-((Y+0.25)*16):NEXT
420 GCOL0,0:MOVE400,860:VDU5,254:MOV
    E840,824:VDU254,4
430 GCOL0,0
440 FORX=320 TO 960 STEP160:MOVEX,256
    :DRAWX,896:NEXT
450 FORY=256 TO 896 STEP160:MOVE320,Y
    :DRAW960,Y:NEXT
460 GCOL0,0
470 FORY%=256 TO 416 STEP 4
480 MOVE800,Y%:DRAW960,Y%
490 NEXT
500 E%=3:F%=3
510 COLOUR2:PRINTTAB(0,29)"PLEASE PRE
    SS ANY KEY"
520 G=GET
530  PRINTTAB(0,29)SPC(20)
540 ENDPROC
550
560 DEFPROCCIR(X%,Y%,R%)
570 VDU29,X%;Y%;
580 FORP=0 TO 360 STEP8
590 N=P*PI/180
600 X=R%*SINN
610 Y=R%*COSN
620 IFP=0 MOVEX,Y
630 MOVE0,0:PLOT85,X,Y
640 NEXT
650 VDU29,0;0;
660 ENDPROC
670
680 DEFPROCMOVE(X1,Y1)
690 LOCAL A%,B%
700 A%=&3AA0+Y1*&C80+X1*&50
710 D%=&3AA0+F%*&C80+E%*&50
720 IF X1=E% AND Y1=F% ENDPROC
730 IF ABS(E%-X1)>1 OR ABS(F%-Y1)>1
    ENDPROC
740 IF X1<>E% AND Y1<>F% ENDPROC
750 !&70=A%:!&72=D%:CALL SWAP
760 E%=X1:F%=Y1
770 ENDPROC
780
790 DEFPROCplay
800 R=RND(-TIME)
810 FORA%=0 TO 500
820 PROCMOVE(RND(4)-1,RND(4)-1)
830 NEXT
840 X%=0:Y%=0:PROCcursor(X%,Y%)
850 VDU5
860 *FX4 1
870 REPEAT
880 G=GET
```

```
 890 PROCcursor(X%,Y%)
 900 IF G=136 AND X%>0 X%=X%-1
 910 IF G=137 AND X%<3 X%=X%+1
 920 IF G=138 AND Y%<3 Y%=Y%+1
 930 IF G=139 AND Y%>0 Y%=Y%-1
 940 IF G=13 PROCMOVE(X%,Y%)
 950 PROCcursor(X%,Y%)
 960 UNTIL FALSE
 970 ENDPROC
 980
 990 DEFPROCcursor(X,Y)
1000 GCOL3,7
1010 A%=320+X*160:B%=896-Y*160
1020 MOVEA%,B%:DRAWA%+160,B%
1030 DRAWA%+160,B%-160
1040 DRAWA%,B%-160
1050 DRAWA%,B%
1060 ENDPROC
1070
1080 DEFPROCassemble
1090 DIM Z% 100
1100 FOR pass=0 TO 2 STEP 2
1110 P%=Z%
1120 [OPT pass
1130 .SWAP LDX£4
1140 .loop1
1150 LDY£&4F
1160 .loop2
1170 LDA(&70),Y:STA(&72),Y
1180 LDA£0:STA(&70),Y
1190 DEY:BPL loop2
1200 LDA£&80:CLC:ADC&70:STA&70
1210 LDA£2:ADC&71:STA&71
1220 LDA£&80:CLC:ADC&72:STA&72
1230 LDA£2:ADC&73:STA&73
1240 DEX:BPL loop1
1250 RTS
1260 ]
1270 NEXT pass
1280 ENDPROC
1290
1300 IF ERR=17 RUN
1310 MODE7:*FX4
1320 REPORT:PRINT" at line ";ERL
1330 END
```


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Graphic windows for the 64 (with Simon's Basic) for your entertainment from ***Adrian Warman***

The concept of 'windows' has been described at length in various publications, but such descriptions tend to concentrate on their use, particularly with regard to textual applications. The aim of this article is to present and describe a routine for enabling graphics to behave in a window-like environment. The coding is written in as standard a version of Microsoft Basic as possible, but inevitably, some graphics commands are needed, and these are taken from the Simon's Basic extension language for the Commodore 64. However, only two such commands are used. Full notes are given for the (easy) conversion of the program to other languages and/or micros.

A window is a computer-controlled area on the screen which will appear, can be written-to and read-from, and can then disappear without any apparent damage to any information underlying the window area. In the case of graphics, this description remains valid, except of course that the information presented can also be diagrammatic rather than textual only. In this article you will see how we can produce a graphic window effect on an ordinary home micro.

For our purposes, it is assumed that the User program will be drawing lines in a given pattern on the screen. Each call to the line drawing routine (either a procedure or a language command) is replaced by a call to the window routine. This routine will convert the given co-ordinates within the window, and proceed to draw the resulting line (if there is one). There are three cases to consider:

1) The line is completely within the window, and so will be drawn in its entirety.
2) The line is partially outside the window, and must be trimmed before drawing.
3) The line is completely outside the window, and so will not appear at all.

The given routine will handle all of these cases. If you wish to draw single points, you will have to check these as separate cases, since the aim of the given routine is to trim a distant line.

In order to use the routine, you do not need to know how it works, but simply obey three rules. Firstly, the window to be used must be rectangular, and have its parameters specified in *XL%*, *XR%*, *YB%* and *YT%* (see table detailing variables used). Secondly, the line to be drawn must have the endpoints specified in *XA%*, *YA%*, *XZ*, and *YZ%*. Finally, replace each line drawing instruction with a call to the window routine, having defined all parameters as above.

As examples, to create a window that uses the entire screen, define: *XL%=0, XR%=319, YB%=0, YT%=199*. To define a window in the centre of the screen: *XL%=80, XR%=240, YB%=50, YT%=150*. You may like to replace Lines 1140-117- inclusive in the given listing (which currently define random windows) with the above codings, in order to study the routine under more controlled circumstances.

The complete theory behind the routine is rather complicated, and will be of interest to only certain readers, most others preferring to simply it as it is without modification (in practice, no alterations should be needed owing to the generalised nature of the routine). However, a brief explanation of how the trimming of each line is performed may be useful when optimising the routine for a specific application.

The trimming theory follows from a simple mathematical axiom. Given a right-angled triangle T, that is, a triangle with one angle of 90 degrees (see diagram 1), then the ratios B/A and D/C are equal. Thus, if we know that: A=10, B=5 and C=3, then the value D will be 1.5.

If you doubt this, try drawing it using pencil and paper, and then measure it for yourself.

If we now overlay a 'window' frame W onto this triangle (see diagram 2), and we know the parameters of the window and of the line, we can calculate how much to trim the line to find the new point *(x',y')*. For a more detailed consideration of this property of triangles, you should consult a mathematics text-book!

Program Notes

You might find it helpful to refer to the listing while following these notes.

1031 The listing (as it is given) produces random windows. This statement will 'seed' the Random Number generator to give a good example sequence. However, the use of this line is strictly optional, and it can be removed with no effect on the main routine.

1040-1050 These lines define the dimensions of the CBM 64 graphic screen. For other machines with different screen sizes, simply change these values to correct the entire program.

1260-1080 Set the entire screen to black with green text. Not strictly necessary, but this produces a clearer display.

1090 Switch to the High resolution display (using Simon's Basic), with foreground colour green on a black background.

1100 Define a random number generator. Many computers produce random numbers in the range 0 to 1. This function using argument 'X' will produce an Integer number in the range 0 to X-1.

1140-1260 Continuous demonstration program.

1140-1170 Define a graphics window of random size and location. If you prefer, replace these lines with suitable assignments as described above.

1180 This call is to a subroutine which will clear the area of the screen where the window will appear. If you do not include this, the effect of the window is less easy to see.

1190-1250 These lines are the coding to produce one of the most elementary graphics display, often used to produce a 'tunnel-like' effect.

1240 This is the important line! It calls the window routine, which will trim the described line depending on

Diagram 1

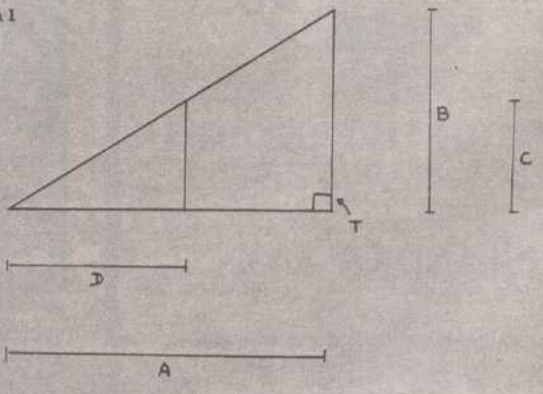
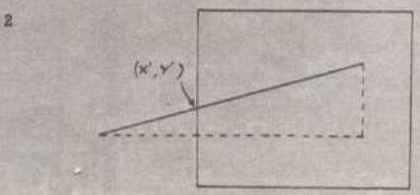


Diagram 2



the defined window. If you wish to see the pattern that is drawn by Lines 1190-1250 in its entirety, replace Line 1240 with: 1240 LINE XA%, YA%, XZ%, YZ%,1

1260 This line makes the main code repeat until you stop the program yourself!

1300-1320 These lines will blank out any data that it where the window is currently defined. Some languages provide a block *fill/clear* routine, which will be faster.

1321-1324 An optional extra. These lines will draw a frame around the defined window area, which makes it much easier to see.

1370-1740 The window routine. This is rather complicated to completely dissect, and so only a brief description of the main sections is provided.

1370-1400 Make working copies of the coordinates of the line to be drawn; these values can then be tinkered with safely.

1410-1470 The first stage of trimming is to fit the line into the vertical bar which contains the window. We must assume that the line is being drawn from left to right in order to trim it correctly, and these program lines ensure that the line is being drawn in the correct direction.

1480 If the line does not appear anywhere within the vertical bar, then trimming will have no effect. The line will never be drawn, so finish now.

1490-1520 Does the line stick out of the left hand edge of the window? If so, trim it (Lines 1500-1520).

1530-1560 Does the line stick out of the right hand edge of the window? If so, trim it (Lines 1540-1560).

1570-1630 At this stage, the line now fits completely within the vertical bar that contains the window. We now repeat the process for the corresponding horizontal bar. This time, we assume that we are drawing from the bottom to the top of the screen. (Note that in Simons' Basic, the bottom of the graphics screen – there Y=0 – is at the top of the Physical screen. This is non-standard, but does not affect the algorithm, and merely flips the screen from top to bottom.)

1640 If the line is entirely outside the horizontal bar, then finish, since no trimming can have any effect.

1650-1680 Does the line stick out of the bottom edge of the window? If so, trim it (Lines 1660-1680).

1690-1720 Does the line stick out of the top edge of the window? if so, trim it (Lines 1700-1720).

1730 At this stage, the resulting line has been trimmed as much as necessary, so draw it!

1740 End of routine.

Variables Used: Main Program.

GW Width of graphics display on the screen. On the CBM 64 this is 320 points. Alter this value if your micro has a different number of horizontal pixels.

GH Depth of graphics display on the screen. On the CBM 64 this is 200 points. Alter this value if your micro has a different number of vertical pixels.

Variables Used: Input to routine.

XR% Rightmost X-value of the Window (an integer value).

XL% Leftmost X-value of the Window (an integer value). Should be less than XR% to make sense!

YT% Topmost Y-value of the Window (an integer value).

YB% Bottom-most Y-value of the Window (an integer value). Should be less than YT% to make sense!

(XA%,YA%) Starting co-ordinates of the line to be drawn.

(XZ%,YZ%) End co-ordinates of the line to be drawn.

Variables used: Routine working store.

XS% Working/Result copy of XA% (X-start).

YS% Working/Result copy of YA% (Y-start).

XD% Working/Result copy of XZ% (X-destination).

YD% Working/Result copy of YZ% (Y-destination).

TM% & TM Temporary stores while swapping values over, and for calculating by how much to 'trim' lines.

Machine Dependant Commands

Finally, for those of you keen on conversion here are the machine dependant commands used within the program, that you must change.

RND (<negative number>) – Seeds the random number generator, so that a known 'pseudo-random' number sequence will follow.

Poke 53280,x – Sets the border of the screen to colour X. On the CBM 64, there are 16 colours (0 to 15).

Poke 53281,x – Sets the background of the screen to colour X.

Print CHR$(30) – Sets the text colour to green.

Hires 5,0 – Switches on and clears the High-resolution display, with foreground colour 5 (=green) and background colour 0 (-black). The screen then has 320 pixels across and 200 pixels down.

Line a,b,c,d,x – Draws a line from (A,B) to (C,D) depending on the value of X. If X is zero, then all points on the line are Reset to the background colour; and when x is 1, all points on the line are set to the foreground colour.

```
1000 rem graphics windows
1010 :
1020 rem by a.warman.
1030 :
1031 x=rnd(-32767)
1040 gw=320
1050 gh=200
1060 poke 53280,0
1070 poke 53281,0
1080 print chr$(30)
1090 hires 5,0
1100 def fnr(x)=int(rnd(1)*x)
1110 :
1120 rem main program loop
1130 :
1140 xr%=fnr(gw)
1150 xl%=fnr(xr%)
1160 yt%=fnr(gh)
1170 yb%=fnr(yt%)
1180 gosub 1300
1190 for i=0 to (gw-1) step fnr
(8)+4
1200  xa%=i
1210  ya%=0
1220  xz%=(gw-1)-i
1230  yz%=gh-1
1240  gosub 1370
1250 next i
1260 goto 1140
1270 :
1280 rem blank frame.
1290 :
1300 for j=xl% to xr%
1310  line j,yb%,j,yt%,0
1320 next j
1321 line xl%,yb%,xr%,yb%,1
1322 line xl%,yt%,xr%,yt%,1
1323 line xl%,yb%,xl%,yt%,1
1324 line xr%,yb%,xr%,yt%,1
1330 return
1340 :
1350 rem main drawing routine.
1360 :
1370 xs%=xa%
1380 ys%=ya%
1390 xd%=xz%
1400 yd%=yz%
1410 if xs%<xd% then goto 1480
1420 tm%=xs%
1430 xs%=xd%
1440 xd%=tm%
1450 tm%=ys%
1460 ys%=yd%
1470 yd%=tm%
1480 if not(xd%>xl% and xs%<xr%)
then return
1490 if not(xl%>xs%) then goto
1530
1500 tm=(xl%-xs%)/(xd%-xs%)
1510 ys%=(yd%-ys%)*tm+ys%
1520 xs%=xl%
1530 if not(xr%<xd%) then goto
1570
1540 tm=(xd%-xr%)/(xd%-xs%)
1550 yd%=yd%-(yd%-ys%)*tm
1560 xd%=xr%
1570 if ys%<yd% then goto 1640
1580 tm%=ys%
1590 ys%=yd%
1600 yd%=tm%
1610 tm%=xs%
1620 xs%=xd%
1630 xd%=tm%
1640 if not(yd%)=yb% and ys%<=yt
%) then return
1650 if not(yb%>ys%) then goto
1690
1660 tm=(yb%-ys%)/(yd%-ys%)
1670 xs%=(xd%-xs%)*tm+xs%
1680 ys%=yb%
1690 if not(yt%<yd%) then goto
1730
1700 tm=(yd%-yt%)/(yd%-ys%)
1710 xd%=xd%-(xd%-xs%)*tm
1720 yd%=yt%
1730 line xs%,ys%,xd%,yd%,1
1740 return
```

Planned out

This week the concluding installment of Mini-planner by ***A Beadle***

This week we continue by looking at the functions of the main procedures in the main program, and List Two, needed to print the *Planner* out to an Epson RX80.

Procedures

new-year – initially sets *inf$* to '000'. Jan 1st is entered as a minimum of two letters; the second of these must be lower case – eg 'Tuesday' or 'tu' will do. Good Friday has also to be given and then all Sundays change *inf$* to "111" and all Bank Holidays to "222 Bank Holiday", (English Bank Holidays). The permanent data in "*???-data*" is also read and arranged in the correct form by *arrange*.

display – sets windows and determines whether to print months or year.

p-year and *p--year* – written in a style determined by the possibility of out-putting to a printer; hence the use of p, t and nl for Print, Tab and New-line. Csize 0,0 copes with the display on my two televisions.

start-month – finds the day of the last of each month and inserts it in the zero elements of array *cal*.

a-data – allows new data to be added on any particular day.

pers-data – is the procedure which reads and acts on the data at Line 5000.

arrange – as mentioned previously is the procedure which arranges the elements of *inf$* in the required form.

monthly and *cal month* – repeat insertions at intervals of 4 weeks or calendar month respectively. They both use *options* to enter the information.

key1 and *key2* – information printed at the bottom of displays.

List 2

The second program is the extra lines and modified lines necessary to print an Epson RX80 printer. The programme could be entered separately and then merged. If this is not required, the 1st program could be entered using *Auto*. *Chr$(134)* is a vertical line; *chr$(139)* is a grey square and *chr$(140)* is a black square.

There are limits to the program. If both 4 week and monthly periods are used in the same file they may over-write one another. If two events occur on the same day, I suggest putting one of them in the next day and starting the data with '. While the program is running it can (as all programs) be paused by pressing *Ctrl* and toggling with *F5*.

If at any time an error occurs, input *menu* and run, and you should be back in the loop.

```
2530 REMark .............
2540 DEFine PROCedure start_month
2550 cal(m,0) = (first + 1) MOD 7: IF cal(m,0) = 0:
 cal(m,0) = 7
2560 FOR i = 0 TO   mnth(m) :cal(m,i+ first ) = i
2570   first  = ( first + i) MOD 7
2580 END DEFine
2590 REMark ..............
2600 DEFine PROCedure  p  (p$)
2610 PRINT #3 , p$;
2620 END DEFine
2630 REMark ...........
2640 DEFine PROCedure t  (num)
2650 PRINT #3, FILL$(" ",num);
2660 END DEFine
2750 REMark .............
2760 DEFine PROCedure nl
2770 PRINT #3,CHR$(10);
2780 END DEFine
2790 REMark ..........
2800 DEFine PROCedure  y_or_n
2810 PRINT "Y or N"
2820 REPeat y
2830 q$ = INKEY$(-1)
2840 IF  q$ ="y" THEN yes =1: EXIT y
2850 IF q$ ="n" THEN yes =0: EXIT y
2860 y_or_n
2870 RETurn
2880 END REPeat y
2890 END DEFine
2900 REMark ..................
2910 DEFine PROCedure load_data
2920 CLS: AT 10,3: PRINT "LOADING DATA"
2930 OPEN_IN #5,file_name$
2940 INPUT #5, year
2950 INPUT #5,mnem$
2960 FOR month = 0 TO 12
2970 FOR day =0  TO 38
2980 INPUT #5,cal(month,day)
2990 END FOR day
3000 END FOR month
3010 FOR month = 0 TO 12
3020 FOR day = 0 TO 38
3030 INPUT #5, inf$(month,day)
3040 END FOR day
3050 END FOR month
3060 CLOSE #5
3070 CLS: menu
3080 END DEFine
3090 REMark ............
3100 DEFine PROCedure save_data
3110   CLS :AT 3,0: PRINT " Year is "; year;: INPUT
 \\ "What file name do you want ? ";init$
3120  LET file_name$ = "mdv1_" & year & "_" & init$
 &"_planner"
3130 OPEN_NEW #5,file_name$
3140 PRINT #5,year
3150 PRINT #5,mnem$
3160 FOR month = 0 TO 12
3170 FOR day = 0 TO 38
3180 PRINT #5,cal(month,day)
3190 END FOR day
3200 END FOR month
3210 FOR month = 0 TO 12
3220 FOR day = 0 TO 38
3230 PRINT #5,inf$(month,day)
3240 END FOR day
3250 END FOR month
3260 CLOSE #5 : menu
3270 END DEFine
3280 REMark ..............
3290 DEFine PROCedure a_data
3300 CLS
3310 AT 3,0 : PRINT "You are limited to 17 characters ;"
3320 PRINT " Two of these  should be capitals"
3330 INPUT \\"Which month ? ( 1 to 12) ";m
3340 INPUT "Which day ? "; day
3350 INPUT "What is data ? "; word$
3360 IF LEN(inf$(m,day)) > 3: inf$(m,day) =
 inf$(m,day,1 TO 3)
3370 IF LEN(word$) > 17: BEEP 20000,50: a_data
3380 arrange
3390 PRINT "More data ? ": y_or_n
3400 IF yes
3410 a_data
3420 ELSE
3430 CLS: CLS #3: menu
3440 END DEFine
3450 REMark ...........
3460 DEFine PROCedure pers_data
3470 REPeat loop
3480 IF EOF:  EXIT  loop
3490 READ  m , day, word$
3510 IF LEN(word$) > 17: BEEP 20000,50: PRINT word$;"-
 Data is too Long": STOP
3520 arrange
3530 END REPeat loop
3540 CLS : menu
3550 END DEFine
3560 REMark ...........
3570 DEFine PROCedure arrange
3580 add =cal(m,0)-1
3590 IF add <0: add = 0
3600 FOR i = 1 TO LEN (word$): IF CODE(word$(i)) >
 64 AND CODE(word$(i)) < 91: inf$(m,day + add,2 ) = word$
 (i): b = i+ 1: EXIT i
3610 FOR i = b TO LEN (word$): IF CODE(word$(i)) > 64 AND
 CODE(word$(i)) < 91: inf$(m,day + add,3) =
 word$(i): EXIT i
3620 inf$(m,day+ add) = inf$(m,day + add) & word$
3630 END DEFine
3640 REMark ...........
3650 DEFine PROCedure monthly
3660 options
```

```
3670 REPeat loop
3680 IF m > 12: EXIT loop
3690 add = cal(m,0)-1 + (cal(m,0)= 0)
3700 inf$(m,day + add,1) = sym$
3710 IF LEN(inf$(m,day + add)) = 3: inf$(m,day + add) =
 inf$(m,day + add) & repr$
3720 day = day  + 28
3730     IF day > mnth(m)
3740     day = day - mnth(m)
3750     m =  m + 1
3760     END IF
3770 END REPeat loop
3780  CLS: menu
3790 END DEFine
3800 REMark ..................
3810 DEFine PROCedure options
3820 CLS
3830 AT 3,0: PRINT "   Suitable Symbols  are : "\"
  #  * - = +  or a lower case letter"
3840 INPUT \\"    Which symbol do you pick ? "; sym$
3850 INPUT \ "    Which Month to start ? "; m
3860 INPUT \ "    Which Day to start ? "; day
3870 INPUT "What does Symbol represent (eg Mortgage
 Payment)  ";repr$
3880 IF (LEN(mnem$) < 64) AND (LEN(mnem$) + LEN(repr$)
 > 64):mnem$ = mnem$ & FILL$(" ",2 + LEN(repr$))
3890 mnem$ = mnem$ & "    " & "'" & sym$ & "'" & " :
 " & repr$
3900 PRINT "    CALCULATING"
3910 END DEFine options
3920 REMark ..........
3930 DEFine PROCedure cal_month
3940 options
3950  REPeat loop
3960 IF m > 12 : EXIT loop
3970 add = cal(m,0)-1 + (cal(m,0)= 0)
3975 dy = day
3980 IF day > mnth(m): day = mnth(m)
3990 inf$(m,day + add,1) = sym$
4000 IF LEN(inf$(m,day +  add)) = 3: inf$(m,day
 + add) = inf$(m,day + add) & repr$
4005 day = dy
4010 m = m + 1
4020 END REPeat loop
4030 menu
4040 END DEFine
4050 REMark ........
4060 DEFine PROCedure key1
4070 t 4: p "'C-'  Car: 'V-' Van : 'M-' Moped":nl
4080 t 4: p "'-L' Licence: '-I' Insurance: '-M' MOT":nl
4090 t 4: p "'-B' Birthday: 'IT' Income Tax: 'PI' Property
 Insurance":nl
4100 END DEFine
4110 REMark .........
4120 DEFine PROCedure key2
4130 t 4
4170 PAPER #3,7: t 1: PAPER #3,0
4190 p "  Bank Holiday " : p mnem$
4200 END DEFine
4210 REMark ........
```

List 2

```
1100 ptr = 0
1110 INPUT "'P' for Epson Printer"\ "Or any other Key for
 Screen";p$
1120 IF (CODE(p$) =80) OR (CODE (p$) = 112):  ptr= 1
1130 IF NOT ptr: OPEN #4,scr_510x30a0x0: INK #4,7: PAPER #4,0;
 CSIZE 0,0: OPEN # 3,scr_500x226a0x30:INK #3,7:PAPER #3,0
1150 IF ptr : OPEN #3,ser1
1260 IF ptr: PRINT #3,CHR$(27);"1";CHR$(2);
1270 IF NOT ptr :CLS #0: CLS #3:INK #4,2:CLS #4:PRINT #4, "
    MINI-PLANNER  "; year
1280 IF ptr:p_o: t 28: p "MINI-PLANNER":p year:nl:nl:p_u
1290 IF ptr:  t 5: FOR m = 1 TO 12:p month$(m): p "  !"
1300 IF ptr: nl
1310 IF NOT ptr:INK #4,4: PRINT #4,"         ";:FOR m = 1 TO
 12 : PRINT #4,month$(m);"  !";
1320 IF NOT ptr:PRINT #4
1340 IF NOT ptr: t 2
1480    IF ptr
1490    p CHR$(139)
1500    ELSE
1520    END IF
1540    IF ptr
1550     p CHR$(140)
1560     ELSE
1580    END IF
1600     IF ptr :PRINT #3,CHR$(27);"E";
1610     IF NOT ptr: INK #3,4
1630     IF NOT ptr: INK #3,7
1640     IF ptr : PRINT #3,CHR$(27);"F";
1710 IF ptr: p_o
1770 IF ptr: p CHR$(12);
1780 IF NOT ptr: p "Any  Key to continue"
1810 IF NOT ptr:CLS #4:CLOSE #4:CLS #3
1870 IF NOT ptr: CLS #3: CLS #4
1900 IF ptr:p_o:t 36: p year:nl:nl: PRINT #3,CHR$(27);
 "@";: p_u
1910 IF NOT ptr:CLS #0: CLS #3:INK #4,2: CLS #4:PRINT
 #4,FILL$(" ",36);year
1930 IF NOT ptr:INK #4,4:PRINT #4,"          ":  FOR m =
 mt TO mt + 2 :PRINT #4,"    "; month$(m);"          ";
1940 IF NOT ptr: PRINT #4
1950 IF ptr: t 5: FOR m = mt TO mt + 2:t 11: p month$(m):t
 10 : p CHR$(134)
1960 IF ptr:nl
1990 IF NOT ptr: t 1
2000 IF ptr: p CHR$(134)
2110 IF ptr
2120 p CHR$(139)
2130 ELSE
2150 END IF
2170 IF ptr
2180 p CHR$(140)
2190 ELSE
2210 END IF
2250 IF NOT ptr: INK #3,2
2270 IF NOT ptr: INK #3,7
2350 IF ptr: p_o
2370 nl: IF NOT ptr:p "'M' for other months  -
or ESC to leave"
2380  IF  ptr: nl:PRINT "'M' for other months  - or
 ESC to leave"
2390 IF ptr:p CHR$(12);
2460 IF NOT ptr :CLS #3: CLS #4: CLOSE #4
2670 REMark ............
2680 DEFine PROCedure p_u
2690 PRINT #3, CHR$(27);"-";CHR$(1);
2700 END DEFine
2710 REMark ..........
2720 DEFine PROCedure p_o
2730 PRINT #3,CHR$(27); "-";CHR$(0);
2740 END DEFine
4140 IF ptr
4150 p CHR$(140)
4160 ELSE
4180 END IF
```

List 3

```
5000 DATA 1,16,"Property Ins."
5010 DATA 1,31,"T.V Licence"
5020 DATA 3,6,"N.Breakdown Club"
5030 DATA 3,7,"Car Insurance"
5040 DATA 4,9,"Car MOT"
5050 DATA 6,30 ,"Moped Licence"
5060 DATA 7,23,"Moped MOT"
5070 DATA 8,17,"Van MOT"
5080 DATA 9,12,"Moped Insurance"
5090 DATA 9,30,"Car Licence"
5100 DATA 12,31," Income Tax Due"
5110 DATA 5,14,"Peggy's Birthday"
5120 DATA 3,21,"Dorothy's B/day"
5130 DATA 5,26,"Mervyn's Birthday"
5140 DATA 5,12,"Mary's Birthday"
5150 DATA 8,29,"Lewis's Birthday"
5160 DATA 8,18,"Margaret's B/day"
5170 DATA 5,17,"Louise's Birthday"
5180 DATA 7,30,"Jennifer's B/day"
5190 DATA 4,24,"Pauline's B/day"
5200 DATA 9,21,"Elizabeth's B/day"
5210 DATA 12,18,"Karen's Birthday"
5220 DATA 4,1,"Stephen's B/day"
```

Dragon's roar

Zap, Ping, Bleep and Kapow for the Dragon with the help of ***Wayne Smithson***

When writing your own programs, you often need to include sound effects, and although sound effects in Basic are easy to do, they don't quite match the quality of machine code sound.

For instance, the *Sound* command has two parameters, pitch and duration (length). Not a lot you might think, but really that is all you have in machine code. The difference is, of course, the speed. In Basic time is used deciphering the command so you get a gap between each sound.

Type:- Forn= 1To255: Sound N,1: Next

Nothing new but you can hear the gaps. In machine code there are no gaps and this increases the speed tremendously, but also, it increases the pitch.

We have decided then that the *Sound* command is no good for sound effects, (yes we have). Onwards then to the *Play* command. Considerably better. You can play tunes with this one and it is a bit better for sound effects but when it comes to the hyper-laser quazer beam, a speeded up tune isn't quite good enough! You can make your tunes/effects sound a bit different if you do the following. . .

```
Play"T255V15A":Poke65313,48:Play
"T401L5BP14L8BP16BP14L5BO2T3P14L
6DL7P20D-P24D-P24O1T2BP24BP24AP
22L2BL3"
```

Once you have *Played* something then *Poked* this value, all sound will be weird until the computer is *Reset*. Also note that the Volume parameter doesn't work.

But now. . .we are going back to the *Sound* command, but not *that* sound command, *my* sound command. It is in the form: *Sound(beg,end,vib,vol)*.

This program gives you an extension to the rather drab existing *Sound* command; you can still do *Sound10,1* but you can also define your own: 'QUAZER' type sound. I will now attempt to explain each parameter in turn.

Beg: This is the beginning of the sound pitch, the higher the number, the lower the sound will be when it starts. This number can be in the range (0-9999). If you choose 0 then you will get two slow beats then the sound. This can be quite effective at times.

End: This is the same as *Beg* but is where you want the sound to end (spot the most obvious statement in this article). If it is lower than *Beg* then the sound will be very long with a quick bit at the end!

Vib: This is the vibration of the notes. It is in the range (0-255) but be warned if you use 0 it will go on forever, it could be used as an alarm of some sort. One is the smoothest or no vibration, 255 is the most. Also note that the higher this number, the quicker the sound will be unless you make the gap between *Beg* and *End* larger. The length of the note depends on the distance between *Beg-End* and also the vibration number.

Vol: This is the volume and determines how loud the sound is (spot the second most obvious statement in this article!). It has a range of (0-252), 0 = can't hear it, 252 = turn the telly down.

Any numbers outside these ranges or numbers omitted etc, will result in the error message: Sound Error or Sound Error in Line 30. Any program or set of instructions will be stopped as with any other errors.

If you have an assembler, you can enter the assembler listing, otherwise a hex dump has been provided. Make sure you *Clear200,32439* before you load in the hex using any hex loader.

NB. Variables may not be used in place of numbers in the command.

```
HEX DUMP
EXEC 32440 TO ACTIVATE
7EB8*8E 7E C4 BF 01 7A 86 7E B7
7EC1*01 79 39 81 A2 27 01 39 9E
7ECA*A6 30 01 A6 80 81 28 10 26
7ED3*00 E4 86 05 B7 7F 2C 8D 48
7EDC*81 8A 27 E8 10 BF 7F 93 30
7EE5*01 8D 3C 81 8A 27 DC 10 BF
7EEE*7F B2 86 04 B7 7F 2C 30 01
7EF7*8D 2B 81 8A 27 CB 10 8C 00
7F00*FF 10 22 00 B7 1F 20 F7 7F
7F09*AE 30 01 8D 16 81 8A 27 B6
7F12*10 8C 00 FC 10 22 00 A2 1F
7F1B*20 C4 FC F7 7F 9A 16 00 69
7F24*34 10 C6 FF A6 80 5C C1 05
7F2D*26 05 35 10 16 00 88 81 29
7F36*27 04 81 2C 26 EC 35 10 10
7F3F*8E 00 00 C1 04 26 08 CE 03
7F48*E8 FF 7F 7E 8D 25 C1 03 26
7F51*08 CE 00 64 FF 7F 7E 8D 19
7F5A*C1 02 26 08 CE 00 0A FF 7F
7F63*7E 8D 0D C1 01 26 52 CE 00
7F6C*01 FF 7F 7E 8D 01 39 CE 00
7F75*00 A6 80 80 30 27 07 33 C9
7F7E*03 E8 4A 26 F9 34 04 1F 30
7F87*31 AB 35 04 5A 39 86 3F B7
7F90*FF 23 8E 00 01 34 10 34 10
7F99*86 FC B7 FF 20 30 1F 26 FC
7FA2*35 10 7F FF 20 30 1F 26 FC
7FAB*35 10 86 0A 30 86 8C 07 D0
7FB4*25 DF 86 86 39 86 A2 39 BD
7FBD*90 A1 8E 7F E6 BD 90 E5 9E
7FC6*68 8C FF FF 27 12 34 10 8E
7FCF*7F F3 BD 90 E5 35 10 1F 10
7FD8*BD 95 7A BD 90 A1 8E 7F FE
7FE1*9F A6 86 8A 39 53 53 4F 55
7FEA*4E 44 20 45 52 52 4F 52 00
7FF3*20 20 49 4E 20 4C 49 4E 45
7FFC*20 00 8A 00 7E BB 40 7E BB
MEMORY DUMP FROM 32440-32767
```

```
* USER DEFINABLE SOUND COMMAND *
    * BY WAYNE J. SMITHSON *
        ORG #32440
        PUT #32440
BEG     EQU BEG1+1
END     EQU END1+1
VIB     EQU VIB1+1
VOL     EQU VOL1+1
NUM     EQU NUMBER+1
INCR    EQU THOU+2
        LDX #START *INTERCEPT
        STX 378    *TO MY
        LDA #126   *ROUTINE
        STA 377
        RTS
START   CMPA #162  *SOUND TYPED?
        BEQ SOUND  *YES.
OUT2    RTS        *NO, RETURN.
SOUND   LDX $A6    *START OF
        LEAX 1,X   *COMMAND+1
        LDA ,X+    *CHECK IF NEW
        CMPA #'(   *SOUND COMMAND
        LBNE OUT   *NO, RETURN
        LDA #5     *****
        STA NUM    *****
        BSR GETNUM ****
        CMPA #138  ***
        BEQ OUT2   **
        STY BEG    *GET ALL
        LEAX 1,X   *VALUES
        BSR GETNUM *FROM THE
        CMPA #138  *COMMAND
        BEQ OUT2   *AND
        STY END    *PUT
        LDA #4     *THEM
        STA NUM    *IN THE
        LEAX 1,X   *CORRECT
        BSR GETNUM *PLACE
        CMPA #138  *WHILE
        BEQ OUT2   *CHECKING
        CMPY #255  *FOR
        LBHI ERROR *ERRORS
        TFR Y,D    *AT THE
        STB VIB    *SAME
        LEAX 1,X   *TIME.
        BSR GETNUM *IF A=138
        CMPA #138  *THEN ERROR
        BEQ OUT2   *HAS OCCURED.
        CMPY #$FC  **
        LBHI ERROR ***
        TFR Y,D    ****
        ANDB #$FC  *****
        STB VOL    ******
        LBRA PLAY  *ALL IS OK
GETNUM  PSHS X     *CHECK FOR
        LDB #255   *NO COMMAS
CHECK   LDA ,X+    *OR END
        INCB       *BRACKET
NUMBER  CMPB #5    *OR NUMBERS
        BNE OK     *TOO LONG.
        PULS X
        LBRA ERROR
OK      CMPA #')
        BEQ GOTEND
        CMPA #',
        BNE CHECK
GOTEND  PULS X     *ALL IS OK
        LDY #0000  *SO GET THE
        CMPB #4    *CORRECT
        BNE N2     *NUMBER
        LDU #1000  *BY
        STU INCR   *ADDING
        BSR ADDUP  *TOGETHER
N2      CMPB #3    *THE
        BNE N3     *THOUSANDS,
        LDU #100   *HUNDREDS,
        STU INCR   *TENS
        BSR ADDUP  *AND UNITS.
N3      CMPB #2
        BNE N4
        LDU #10
        STU INCR
        BSR ADDUP
N4      CMPB #1    *CHECK NO
        BNE ERROR  *NUMBER
        LDU #1
        STU INCR
        BSR ADDUP
        RTS
ADDUP   LDU #0000  *ADD UP THE
        LDA ,X+    *VARIOUS
        SUBA #48   *COLUMNS
        BEQ FINI
THOU    LEAU 1000,U
        DECA
        BNE THOU
FINI    PSHS B     *COMBINE THE
        TFR U,D    *COLUMNS
        LEAY D,Y   *TO GIVE
        PULS B     *ONE NUMBER
        DECB       *IN THE Y
        RTS        *REGISTER
PLAY    LDA #$3F
        STA $FF23  *AUDIO ENABLE.
BEG1    LDX #0001  *BEGIN.
LOOP    PSHS X
        PSHS X
VOL1    LDA #$FC   *VOLUME.
        STA $FF20  *STORE IT IN
DEC1    LEAX -1,X  *SOUND PORT.
        BNE DEC1   *DELAY TO
        PULS X     *ALTER PITCH.
        CLR $FF20  *CLEAR SOUND
DEC2    LEAX -1,X  *PORT TO HEAR
        BNE DEC2   *SOUND.
        PULS X
VIB1    LDA #10    *VIBRATION.
        LEAX A,X
END1    CMPX #2000 *END
        BLO LOOP
        LDA #134   *'DATA' TOKEN
        RTS        *FINISHED.
OUT     LDA #162   *'SOUND' TOKEN
        RTS        *FINISHED.
ERROR   JSR $90A1  *LINE FEED
        LDX #ERRM  *SCREEN.
        JSR $90E5  *PRINT MESSAGE
        LDX 104    *GET LINE NO.
        CMPX #65535
        BEQ DONE   *CHECK NO LINE
        PSHS X
        LDX #LINE  *PRINT REST
        JSR $90E5  *OF MESSAGE.
        PULS X
        TFR X,D    *PRINT LINE
        JSR $957A  *NUMBER.
        JSR $90A1  *LINE FEED.
DONE    LDX #END2  *STOP BASIC
        STX $A6    *PROGRAM OR
        LDA #138   *SET OF
        RTS        *INSTRUCTIONS.
ERRM    FCC /SSOUND ERROR/
        FCB 0
LINE    FCC /  IN LINE /
        FCB 0
END2    FCB 138,0
```

Open Forum

We are always actively seeking programs for publication – either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation – usually not more than 1000 words – should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Numerals

on Spectrum

Our modern system of numbering, with its reliance on place-values, was invented by Hindu mathematicians in the sixth century AD and introduced to Europe by Arab traders (hence the word 'Arabic' for the numerals 1 to 9). The system it supplanted was the one used throughout the Roman Empire, the characters it employed being known for this reason as 'Roman numerals'. Despite the superior usefulness of Arabic numerals as a medium for calculation, the Roman system proved tenacious: even today it is used as a method of numbering chapters of books as well as on clock faces. Older books frequently have a date of publication printed in Roman numerals.

This program converts these numerals to the more familiar Arabic format. It works by first totalling the numeral values of all the characters (as though no subtraction were involved) and then subtracting an appropriate amount for each instance of the subtractive principle which it discovers.

```
  1 REM Number change © C.P.Rav
ilious 1983.
  5 BORDER 6: PAPER 6: CLS
 10 CLS : PRINT AT 3,7;"
";AT 4,7;" NUMERAL CHAR
";AT 5,7;"
 15 PRINT AT 10,0;"This program
 converts numbers inRoman numera
ls, including dates,into their A
rabic equivalents."
 20 PRINT AT 21,2;"- PRESS ANY
KEY TO CONTINUE -"
 25 IF INKEY$="" THEN GO TO 25
 50 CLS : PRINT AT 3,0;"Enter t
he number you wish to convert
, using capital letters.";AT 8,8
;"e.g. MCMLXXXIII"
 80 LET o=0: LET p=0: LET q=0:
LET r=0: LET s=0
 90 LET t=0: LET c=0: LET l=0:
LET x=0: LET v=0: LET i=0
100 INPUT a$
110 FOR n=1 TO LEN a$
115 IF a$(n)<>"M" AND a$(n)<>"D
" AND a$(n)<>"C" AND a$(n)<>"L"
AND a$(n)<>"X" AND a$(n)<>"V" AN
D a$(n)<>"I" THEN GO TO 80
120 IF a$(n)="M" THEN LET t=t+1
000: GO SUB 500: GO SUB 550: GO
SUB 600: GO SUB 650: GO SUB 700
130 IF a$(n)="D" THEN LET t=t+5
00: GO SUB 500: GO SUB 550: GO S
UB 600: GO SUB 650: GO SUB 700
140 IF a$(n)="C" THEN LET t=t+1
00: LET c=c+1: GO SUB 550: GO SU
B 600: GO SUB 550: GO SUB 700
150 IF a$(n)="L" THEN LET t=t+5
0: LET l=l+1: GO SUB 600: GO SUB
 650: GO SUB 700
160 IF a$(n)="X" THEN LET t=t+1
0: LET x=x+1: GO SUB 650: GO SUB
 700
170 IF a$(n)="V" THEN LET t=t+5
: LET v=v+1: GO SUB 700
180 IF a$(n)="I" THEN LET t=t+1
: LET i=i+1
290 NEXT n
395 PLOT 5,112: DRAW 240,0: DRA
W 0,-70: DRAW -240,0: DRAW 0,70
400 PRINT AT 10,3;"The Arabic e
quivalent of";AT 12,10;a$;;AT 14
,3;"is ";t-o-p-q-r-s;"."
405 PRINT AT 20,0;"Do you wish
to convert another number (Y/N)
?"
410 IF INKEY$="" THEN GO TO 410
420 IF INKEY$="y" OR INKEY$="Y"
THEN GO TO 50
425 STOP
500 IF c>0 THEN LET o=200
510 RETURN
550 IF l>0 THEN LET p=100
560 RETURN
600 IF x>0 THEN LET q=20
610 RETURN
650 IF v>0 THEN LET r=10
660 RETURN
700 IF i>0 THEN LET s=2
710 RETURN
```

Numerals
by C Ravilious

Book Ends

Book *Supercharge Your Commodore 64* **Price** £6.95 **Micro** Commodore 64 **Supplier** Melbourne House (Publishers) Ltd., Melbourne House, Church Yard, Tring, Hertfordshire HP23 5LU.

Supercharging improves the performance of your car and the machine code routines contained in this book will certainly speed up your Commodore 64.

Of course, the CBM 64 needs this sort of boost owing to the insufficient nature of its Basic control over sound and graphics, and here are the techniques, clearly laid out. You are taken through the bit-mapped screen, sprite control and various sound and music effects, to utilities such as a line renumber.

What sets the book apart though is that almost every routine is accompanied by a flow chart, and combined with the fundamental explanation of machine code in the first chapter, it provides a clear and practical introduction to assembler programming. Highly recommended for being more than just a rather daunting list of mnemonics. **John Minson**

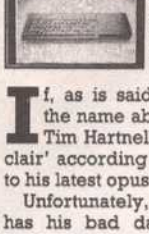
Book *Micro-Maths* **Price** £8.95 **Micro** Any **Supplier** Macmillan Publishers Limited, Houndmills, Basingstoke, Hants. RG21 2XS.

A character in the film *Gregory's Girl* observes that boys seem to be fascinated by numbers. Whether this book, based on Keith Devlin's *Guardian* newspaper column, will mainly appeal to boys remains to be seen, but its subject is numbers.

Within its hundred pages you'll find the quest for the ultimate prime number; strange facts about pi (not the one on the back cover of this magazine) how to calculate the Oxen of the Sun!

Computers have played their part in unravelling such numerical teasers, but even if you don't own a *Cray-1* there are problems to solve on your humble micro. So if you have a number crunching mind this book is for you, though others may find their heads reel from its mathematical magic.

John Minson



Book *Tim Hartnell's QL Handbook* **Price** £7.95 **Micro** Sinclair QL **Supplier** Interface Publications Ltd., 9-11 Kensington High Street, London W8 5NP

If, as is said, stardom is the name above the title, Tim Hartnell (or 'Mr Sinclair' according to the cover to his latest opus) is a star.

Unfortunately, every star has his bad days and this lacklustre survey of QL Superbasic appears to be a product of one of Tim's. It's dash through the language is punctuated by numerous short programs and a handful of blank pages.

Never mind. 'Mr Sinclair' is a prodigious author and his next book on the QL can only be better. **John Minson**

Screen Dump

on Memotech

After writing a Basic screen dump I found that, although fast compared to screen dumps for other machines, the program was still quite slow.

I then wrote the routine in Z80 Assembler and here is the final result which should work with any Epson compatible printer, eg, Shinwa CTI CP80.

It takes just under 50 seconds to dump the whole graphics screen on to paper.

```
8010 START:  LD A,27
8012         CALL PRINT
8015         LD A,"A"
8017         CALL PRINT
801A         LD A,7
801C         CALL PRINT
801F         LD B,191
8021 LL:     PUSH BC
8022         LD A,B
8023         LD (Y),A
8026         LD A,27
8028         CALL PRINT
802B         LD A,"K"
802D         CALL PRINT
8030         LD A,0
8032         CALL PRINT
8035         LD A,1
8037         CALL PRINT
803A         LD B,255
803C L1:     CALL CSR
803F         DJNZ L1
8041         CALL CSR
8044         LD A,13
8046         CALL PRINT
8049         LD A,10
804B         CALL PRINT
804E         POP BC
804F         LD A,B
8050         SBC A,7
8052         JP Z,END
8055         LD B,A
8056         DJNZ LL
8058         RET
8059 CSR:    LD A,255
805B         SBC A,B
805C         LD (X),A
805F         RST 10
8060         DB #85,27,67
8063 X:      DB 0
8064 Y:      DB 191
8065         DB 8
8066         LD A,(#FE1A)
8069 PRINT:  PUSH AF
806A LOOP:   IN A,(4)
806C         BIT 0,A
806E         JP NZ,LOOP
8071         IN A,(0)
8073         POP AF
8074         OUT (4),A
8076         RET
8077 END:    RET
8078         RET

Symbols:
START   8010
CSR     8059
LL      8021
X       8063
LOOP    806A
PRINT   8069
L1      803C
Y       8064
END     8077
```

Screen Dump
by M Docherty

Share and share alike

Many readers will have recently heard of, or even received a mailshot for, Dialog Knowledge Index. It is a stripped down, cheap rate version of the Dialog Database, one of America's premier keyword search systems.

If you network regularly, you'll be used to what is known as 'menu-driven' systems, which allow you, the user, to follow fixed options on your travels through the database. Whilst this is acceptable to most people, it soon becomes tedious to have to labour through several menus to get to a frequently used page. For this reason, most menu driven networks offer a 'skip' method of pinpointing the information required.

All menu driven systems guide the user down well defined routes, and give the impression of allowing 'freedom of choice', when, in fact, this is not so. If you don't know what's there, how do you know that you want to look at it? This is where systems such as Dialog, and its off-peak service, Knowledge Index come in. They provide what are known as Keyword searches. Put simply, you type in the word, or words that you're interested in, and a few seconds later, a set of files are printed out at your terminal. Great! Why don't all databases use it? For the simple reason that whilst the host computer is searching for your enquiry, it cannot (effectively) deal with many other similar such enquiries. In short, it is expensive in (C)entral (P)rocessor (U)nit time.

CPU's as they are known, cost money – hence the (relatively) high charges of such systems – Knowledge Index costs a cool $25 an hour to use!

Menu based services, as most readers in the UK will be familiar with, work on the premise of timesharing of CPU time. When you key a command on Prestel, the central computer actions your command in the blink of an eye but, because it takes a second or two to transmit the page to your terminal, it appears instantaneous to you. This allows the computer to multi-task other jobs.

With keyword searching, the computer can only deal with a few searches simultaneously, unless it has a very large CPU, with a corresponding increase in its, and therefore your, costs. Knowledge Index is the first attempt by a major Database Vendor to approach the mass market. Previously, most users were libraries, or large institutions, who could absorb the high costs easily. Nevertheless, the charges for even a few hours usage are extremely high, and likely users would be wise to consider the potential costs before embarking on what could turn out to be an expensive exercise. Dialog Knowledge Index P.O. Box 8, Abingdon, Oxford OX13 6EG. Telephone 0865 730969. Signup £25 including 2 free hours + manuals $25 (£21 approx. – based on current exchange rates) an hour thereafter.

Robin Wilkinson

Baud Walk is a new weekly column with news on networking, databases, reviews of modems and software and points of contact for information.
Any readers with experience of networking are asked to send their experiences or news of services to Robin Wilkinson, Baud Walk *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD. He can also be contacted on Prestel mailbox 019993727.

Knight Lore Special

This week we have an extra special treat from Nick Moore of London for Spectrum owners in the form of a map of Ultimates's *Knight Lore*. Incidentally with the release of *Sabre Wulf* for the BBC B who knows where versions of the Sabre Man trilogy will turn up next – so I advise everyone, especially Beeb owners, to keep hold of their copy as well. Ultimate are notoriously tight lipped about their plans and often the only clues we get about future releases come when someone completes one of the games — it seems particularly interesting that there are at least three different messages at the end of *Underwurlde*, one of which refers to *Knight Lore*, one to a game called '*Pentagon*' and one to '*Mire Mare*'. The latter is also mentioned at the end of *Knight Lore*. How close these are to completion, or how soon *Alien 8* will be released, no one knows at the time of writing.

Anyway our sincerest thanks go out to Nick for his stirling work in compiling this guide. Not surprisingly, considering the complexity of the graphics, the maze is smaller than in other recent Ultimate games but the fact that you can't tear around at top speed rushing straight past some locations makes the game seem larger that it is (which I'm sure is partly why many found *Atic Atac* more enjoyable and challenging than the much larger *Sabre Wulf*). The map is based on a 16x16 grid although only 128 locations are used (compared to over 500 in *Underwurlde*). There are 32 objects dotted around of eight types, four of each, and they will always be arranged in one of eight possible layouts. The table thus allows you to predict the location of the remaining objects once you have found one of them. For example, if you find a bottle in room C3 you can look along the table and see that arrangement '2' is operating. Looking for the number 2 in the 'Boot' row for example will show you the rooms where boots can be found.

The aim of the game is to collect two of each object and put them into the wizard's cauldron in the correct order. The cauldron smoke tells you which item is needed next and you simply have to look in the table to see where to go. Easy – now you only have to worry about the guards, the ghosts, the spikes, the collapsing floors. . . .

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

TABLE OF OBJECTS

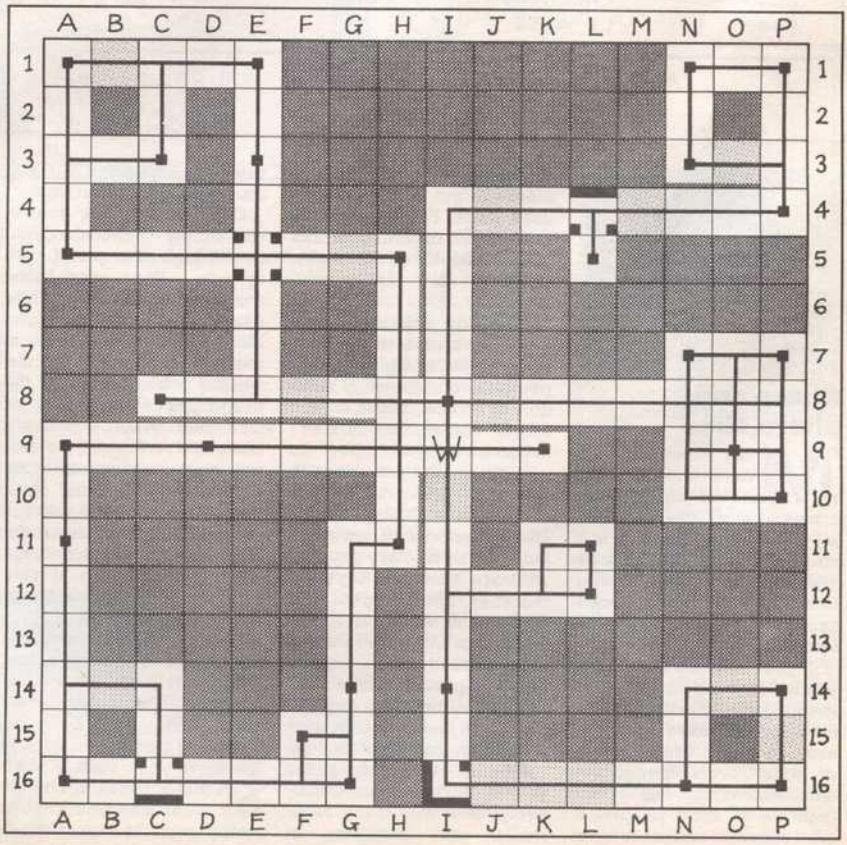
E1	N1	P1	H5	N3	A9	P4	N7	
C3	L5	P10	L11	A5	D9	C8	I8	
E3	P7	L12	G16	A11	H11	O9	G14	
P14	K9	P16	A1	A16	I14	F15	N16	
1	2	3	4	5	6	7	8	BOOT
2	3	4	7	8	5	6	1	BOTTLE
3	4	7	6	1	8	5	2	GEM
4	7	6	5	2	1	8	3	BOWL
5	8	1	2	7	4	3	6	T-CUP
6	5	8	1	4	3	2	7	POISON
7	6	5	8	3	2	1	4	ORB
8	1	2	3	6	7	4	5	LIFE

KNIGHT LORE

KEY

- A ROOM WHICH CAN'T BE PASSED WITHOUT AN OBJECT
- EMPHASIZED ROOMS, WHERE YOU MIGHT START
- A ROOM WITH AN OBJECT IN IT
- THE WIZARD'S ROOM WITH THE CAULDRON

DIAGRAM BY NICK MOORE AND MASSIMO PILIA



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Tony Bridge's Adventure Corner

Midnight's Children

The grand Elf is back in the frozen wastes this week – but this time in the Land of Midnight. It's been several months since I last looked at *The Lords Of Midnight*. Beyond's great adventure/strategy/war game. In the meantime, of course, the sequel has been released and is doing a roaring trade everywhere. I've had a couple of letters from the first people to brave Shareth's wrath and complete the game – but I'll get on to these in next week's Corner.

For now, let's look back at LOM and some of the techniques that players have found paid off in their battles against Doomdark. The first point is raised by Keir Thorpe (he was mentioned in Vol 3 No 39), who says: "I'm surprised that many people seem to have taken between 309 and 403 days to storm the Citadel of Ushgarak. I did it in 32 days with a force of all the Marshal Lords (there are ten) each with an army of 1000 men at least, and many other Lords, totalling about 6-7000 men."

The speed with which the Quest can be accomplished is mentioned in most LOM letters. Graham Nash, for example, writes: I captured the foul citadel after 30 days." While a favourite strategy seems to be to hole up in Xajorkith, Graham favours bypassing Xajorkith – "this only slows down one's armies and is a bit risky" – and forging on with a large force to Ushgarak, where the final assault may be made while the Foul legions sweep south to Xajorkith, taken in by the feint. Meanwhile, of course, Morkin has captured the Ice Crown and thus a double victory is secured.

Jim Clavier, whose name I've mentioned before in the Corner, says: "Victory went to the Free after 26 days. Also find enclosed a printout which shows Luxor in the Frozen wastes. I'm not telling you how I got him there (oh spoilsport) because I would like to think that I have been very clever, when fact it was pure accident!"

Richard Clift helped Morkin to complete his Quest in 17 days, although the military defeat of Domdark's armies took a little longer – 50 days. This is quite quick. Richard speaks for many others when he says: "Probably the best strategy appears to be: send Morkin up the West side of the map, heading North until you find Fawkrin at Moonhenge. Recruit him and keep him with Morkin all the time, although you must remember that he cannot travel as fast. Keep moving North until you reach the Citadel of Gloom and then East to the Mountains of Death and ultimately to the Tower of Doom. Then take the Ice Crown! PS – Lord Herath will never go into battle!"

Alasdair Fraser also asks: "Is my achievement of 17 days a record?" As you will see, Alasdair, it is not! Jonathan King, though, says: "I have destroyed the Ice Crown in just 16 days. Is this a record?" Read on Jonathan!

Iain Gibson: "It takes me a mere 11 days to win by destroying the Ice Crown, and 35 days by capturing Ushgarak." Iain, like several others, prefers to send another friend, Farflame, with Morkin. "I was rather surprised at your description of Farflame as 'weak'. He is in fact one of the strongest characters in the game. In one of my battles he saw off over 400 of the foul!" Yes, I'm afraid that I made a bit of a booboo there – I've had dozens of letters from the Fans of Farflame, and I now say, very contritely, that Farflame has been maligned – of course, he *is* very strong, and, moreover, can travel *very* quickly (which, in my defence, I did mention), having the power of flight. J R Eastman, incidentally, has found a novel use for Farflame: "Before doing anything else, I mapped the whole of Midnight, ending up with a 3ft × 4ft epic. I did this by employing Farflame, who moves around at a fantastic rate."

Iain goes on to counter Keir Thorpe's remarks in that Corner about 'a possible bug' that he thought he'd discovered – namely, that some characters seemed to experience an early dawning. This, says Iain "is the work of the Cup of Dreams. This is magical, and when found, no matter what time of day it is, Dawn breaks. it is roughly the opposite of the Hand of Darkness, which brings death to the day." Susan Scott also mentions the Cup of Dreams, and says that "pressing *Seek* at certain Liths will give you the information you require."

But back to the record-breakers: J R Eastman, mentioned earlier, declares triumphantly: "Quite by accident, I defeated Doomdark by sending Morkin off on his adventure. It took exactly 6 days. Even when allowing Morkin to wander around admiring the ruins and cutting his toenails at every possible opportunity, it has never taken more than 20 days. I now tend to use this strategy if I only have an hour or so to play."

But all this talk of record-breaking, gratifying though it may be to the player, should not divert attention from the richness of the game. Apart from the speedy end which Morkin's Quest can bring, there is the more complex and rewarding military campaign. This is highlighted by Matthew Baker: "The characters, depending upon exhaustion, will only travel 8 leagues on the plains, 6 on the Downs, 4 in the Forests and 2 in the Mountains (Fey will travel fastest in Forests). This will strike a chord in the hearts of those old wargaming fans! Matthew also has a couple of hints for those of us still looking for a couple of the Lords: "To find the Lord of Shadows, who is Fey travel N,N,NWQ from the Tower of the Moon. And Farflame can be found near the village of Coroth, 16 or 17 leagues north of the Tower of the Moon."

Thanks to everyone who has written to the Elf about Lords of Midnight. J J Smith sent a very useful list of all the characters and their location in the game, while others have sent detailed maps. John Nolan, who describes himself as "a cynical programmer" (is there another kind. John?) has found a anomaly which he calls "Longrim's Bubble", which manifests itself as the Tower of the East of Fadrath (Lord Lorgim of course is one of the characters who can destroy the Ice Crown). The path to this Tower is very narrow, and John's tactic is to amass the Armies of the Free (24,000 of 'em!) in this narrow neck, and allow them all to become Utterly Invigorated.

Next week, our first *Doomsdark's Revenge* victors.

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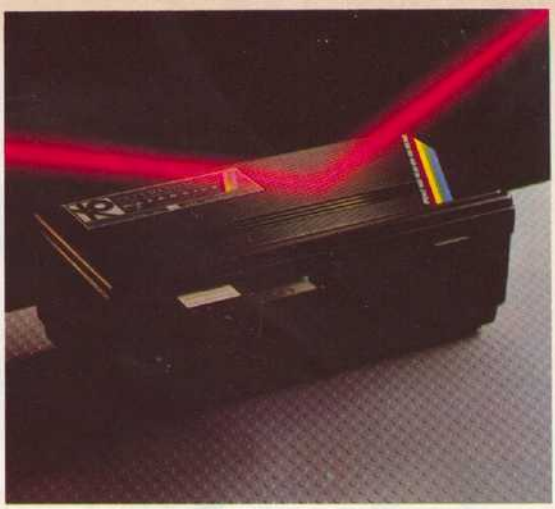

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Peek & Poke

Joystick choice

Paul Tang of Burton on Trent, writes:

Q I have only seen two joysticks for the BBC; the Quickshot and the one from Acorn. I was wondering whether there were any other joysticks for the BBC that you would recommend.

A One other that I have come across is the Zip Stick, retailing at about £18. However, joysticks are not really things to be bought on the recommendations of another person. It is really a matter of personal choice; you should buy the stick that you feel most comfortable playing with. It's no good if you buy one that gives you 16-way movement if your hand aches every time that you use it!

The waiting game

Vincent Tuckwood of Watford, writes:

Q Earlier this year I was on the verge of buying a Commodore 64 when an announcement was made concerning the new family of micros being developed by Commodore. After deciding to wait I have now been able to read several glowing reports of the Plus/4. The Plus/4 seems suitable for the serious applications that I would need, I am, however, disturbed that it seems less suitable for games, which is the other feature that I would want from a micro.

Will the popular games for the CBM 64 be made available on the Plus/4, and also will the CBM 64 die out as a result of the Plus/4. Although the ultimate choice remains mine, I would be grateful for your advice on whether I should go for the Plus/4 or for the established CBM 64

A .I don't believe that the Plus/4 will be able to offer the range of games software that the CBM 64 has, neither do I believe that the CBM 64 will be phased out as a direct result of the Plus/4. In the light of these facts it would seem to me that you would be best advised to go for the CBM 64.

It is always the case with home computers that as soon as you have made your mind up as to which machine to buy another new product will appear to confuse the issue yet again. It is all a question of timing, I suppose. For example, I bought a computer, and two weeks afterwards the price was reduced by £50! Even the best of us make mistakes.

Missing header

James Young of Redditch, Worcestershire, writes:

Q How do I Load and Save and Run a copy which has lost it's header? I have a number of such programs. Some have lost the header due to my carelessness in Saveing, and some for other reasons. As I no longer have the listings for the bulk of these programs they are effectively lost to me.

I know I am not the only one with this problem; two of my friends, both Spectrum users like myself, have the same problem and we would all be very grateful for an answer.

A A technique that I have used quite successfully is to *Load* the header portion of a complete program, stop the cassette after the header has been read, and then *Load* in the tape containing the headerless program. When *Loading* has finished you will get the message *Tape Loading Error*, but on *Listing* (if in Basic) you will find that the complete program is there.

With machine code you will also have to make sure that the header you choose is for a large program (bigger than the one you are trying to *Load*), and that the correct *Clear* command has been issued. Once a program has been successfully *Loaded* in to memory, *Saveing* it should present no problem. But don't forget to let the cassette run past its leader portion, or you will lose the headers again!

Add-on keyboard

Jason Toole of London, writes:

Q I am seriously thinking of purchasing a typewriter style keyboard for my 48K Spectrum. There is a large selection on the market, so please could you help me to choose one. The price should be about £50

A The new LoProfile keyboard (which was reviewed in Vol 3 No 38) seems a good bet for you. As the reviewer says, "It's good looking, electromechanically simple and easy to fit." At £49.95 this keyboard is just within your price range.

It is also, not the first Spectrum keyboard produced by the manufacturer (Advanced Memory Systems), and this time they do appear to have corrected a lot of the problems normally associated with replacement keyboards for the Spectrum.

Their address is: Green Lane, Appleton, Warrington.

Uncomfortable keys

N Hurll of Ringwood, Hampshire, writes:

Q Please can you help me? I own a 48K Spectrum and some of the games I have use control keys which are very uncomfortably placed. Is there anything I can do to change the control keys to my choice, where the program does not have that facility built in?

A Your best bet would be one of the programmable joysticks that are currently available.

There is quite a good choice, I will mention two that I have used myself, although there are others that I have seen reviewed that seem to be of similar quality.

The two I can personally recommend are the Fox programmable joystick (£36.95) and the Cambridge programmable joystick (£29.95). You can contact Fox at Fox House, 35 Martham Road, Hemsby, Great Yarmouth, Norfolk NR29 4NQ; and Cambridge at 61 Ditton Walk, Cambridge CB5 8QD.

High resolution

Clive Savage of Millom, Cumbria, writes:

Q Please explain the difference between Normal, Medium and High resolution colour monitors (in relation to an 80 column display and 640 × 256 graphics display).

A The main factor to consider when looking at monitors is the number of plotting points across and down the screen that are available to you. Most micros use the 8 × 8 pixel matrix to display a character, thus meaning that to display 80 characters across the screen, you require 80 × 8 pixels across (640).

A normal domestic television set is not normally able to handle resolution of this type very successfully, which results in a blurring of the image being displayed.

This is where the monitor comes in. A reasonable monitor should provide for 640 × 256 graphic without any problem.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2R 3LD

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WANTED. Quantities of the following used equipment required immediately for special order. Must be perfect. CBM64 (£120 paid), C2N (£20), 1541 (£100), MPS801 (£110), Colour Amstrads (£255), VIC Switchable RAMS (£13), Commodore Modems (£50), Spectrum 48K (£65), ZX Printers (£15), Alphacom 32 (£32), Interface I (£24); Cash by return. Computamart, 195 Seabourne Road, Southbourne, Bournemouth. Tel 433759.

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Sunshine Publishers of Popular Computing and Dragon User. PL31

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COLOUR MONITORS, 14", 2nd user, excellent condition, no case, £119.50 inc. Tel: Lucas (0482) 702999/701437.

SINCLAIR QL. unwanted gift, guarantee not yet sent away. Completely as new. Bargain at £310. Tel: 0344 886178 after 5.30pm.

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CASIO FX700P mini computer FAC, cassette interface FP12, printer, £80 o.n.o. Tel: Leicester 671228 after 6pm.

CBM1541 diskdrive, Easyscript, £100 software, mags, £260 o.n.o. Tel: Rochdale (0706) 59995 after 5pm.

BARGAINS. Spectrum 48K £65 o.n.o. ORIC-1 48K £55 o.n.o. Memotech MTX512 £180 o.n.o. Need quick sale. Tel: Torquay 34122 after 6pm.

COMMODORE 64. Sold everything. Just disc software left for sale. Tel: (0222) 734116 after 6.

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ZX INTERFACE I £35. ZX Microdrive £35. 5 cartridges £15. Unwanted Xmas gift, will pay postage. Tel: Rob 0698 822 744 after 5pm.

MAGAZINES for sale. 2nd hand issues of Crash and Sinclair user, most issues available. 50p each or any 5 for £2. Tel: Pontefract 0977 704020 after 4pm.

CASIO-TONE MT70 electronic keyboard, as new. £120 o.n.o. or swap good BBC printer. Tel: 01-458 3995 eves.

DMP1 AMSTRAD printer, brand new, list price £199. £125. Tel: 01-459 6274/01-450 6868.

TRS80 colour computer learning tab, as new, full documentation in original file with cassette software, must sell, will post if required. £19.50. Tel: 0244 675717.

SINCLAIR QL as new, spare micro drives and carry case, still under guarantee. £275. Tel: 01-701 0566 after 4.30pm.

FOR SALE The Great Space Race £10, White Lightning £10, Zombie Zombie £4, original tapes only. Tel: 061 223 9430.

FOR SALE Anirog Zodiac for Commodore 64, over 400 screens, sell for £3.50 also Solo Flight cost £14.95 sell for £5, all original with instructions. Tel: Dave 021 777 5023 eves.

FOR SALE Forbidden Forest by US Gold, cost £9.95 sell for £4, also Wheelin Wallie for £3.50, both ace complete and original. Tel: Dave 021 777 5023 eves.

AMSTRAD software, Code Name Mat, Hunter Killer, Roland Caves, mint condition, £4.50 each. Tel: Sunbury 80611.

PRINCE 12" green screen monitor £45, microwave 5¼" disc drive, 40 track single sided £65. Tel: Epping 76040.

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Wanted

WANTED ZX printer, will pay up to £50. Tel: Sheerness 664009.

WANTED for Spectrum, the complete Spectrum system 15,000 Logica 3 or Honeybold basic course. Tel: 061 368 6935.

WANTED broken Spectrum/ Pheripherals for spares, any condition. Tel: Ian 01-881 4636.

WANTED Pannelle Printer interface for Lynx 48K micro. Tel: 0472 72770 eves.

SWAP colourhead enlarger universal developing tank, CDS enlarging computer electronic timer, as new, plus chemicals and other darkroom equipment for Commodore 64K. £250 o.n.o. K. Coray, 3 Perqang House, Prusom Street, Wapping E19.

WANTED Spectrum joystick interface, will pay £8, also wanted DK'Eronics keyboard, reasonable condition, will pay £15. Anyone want to be my pen pal? Must have Spectrum computer, any offers. Tel: Bishop Auckland 833824.

SWAP my radio controlled Porsche car and 3 electronic games for any working Spectrum ZX 48K. Tel: 0349 882706.

WILL SWAP Dragon 32, 3 months old, under guarantee, 3 cartridges, 28 games, 6 issues Dragon user, joystick for Amstrad or Electron. Tel: Farnborough 510764.

SPECTRUM pen pals wanted, hints and tips. Write to: R. Raayen Noonder, Kroon 7, Emmeloovd, Holland.

SIMEN basic cartridge, unused, swap for CRN cassette deck. Tel: 01-515 5922.

WANTED Crash Issue One. Will pay. Contact, V Moore, Room 6, Baddeley House, Oxstalls Lane, Gloucester. GL2 9HW.

WANTED BBC Micro model B. Disc Interface prefered, £200 paid. Tel: 05827 69152.

VECTREX GAMES CONSOLE + £200 worth of games. Will swap for Dragon or Sinclair computer. Tel: 01-732 0832 anytime.

WANTED APPLE + 2 floppy disc drives and monitor. Will pay between £5-600. Tel: 0742 308374.

AMSTRAD + s/w, joystick, several books + mags. 3 mths old electric organ, £450. Exchange CBM 64 system or BBC. Tel: Wokington 0900 65614.

Spectrums for Sale

48K SPECTRUM, tape recorder, printer, joystick, interface and over eighty games, inc. Ultimate, Quicksilva and software projects. All as new £350. Tel: 0734 712255.

SPECTRUM SOFTWARE for sale. Alien 8, Blue Max, Hunchback II, Moon Patrol, Ghostbusters, Boulder Dash, Chinese Juggler, Zaxxon, Gift from the Gods. Tel: John 01-476 8884 after 6pm.

SPECTRUM 48K in DK-Tronics keyboard with p/supply £100, Alphacom printer £40, software OCP toolkit, Masterfile, Scope, various games, half price or less. Halfacre, 53 Silvester Close, Basingstoke Hants RG21 2HX. Tel: 0256 24635 evenings.

SPECTRUM plus for sale with excellent data recorder, twin joystick, interface and lots of software inc. Eureka, Great Space Race, Ghostbusters, Match Day, Boulder Dash. £195. Tel: 01-470 0861.

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SPECTRUM SOFTWARE for sale, all half price, Mr Kong, Jasper, Startstrike, Blue Max, Run for Gold, all or nothing + many more originals. Tel: 01-368 3784.

48K SPECTRUM, plus DK-Tronics keyboard plus Currah speech + tape recorder, £280 original s/w. £230 o.n.o. Tel Bristol 649441 after 5.30pm.

SPECTRUM UTILITIES for sale, paintbox, Vu-Calc £4 each, ZXED toolkit £3 or £10 for lot. Tel: 0236 29808 after 6pm.

FOR SALE Spectrum 48K, Comcon, joystick, data recorder, 100s of software, some books. £250 or swap for Commodore 64 and recorder. Tel: Thetford 3654.

48K SPECTRUM, leads, £60 of software including Daley's Decathlon, Strangeloop, Games Designer, Psytraxx etc. £100 o.n.o. Tel: 01-669 0609.

FOR SALE Spectrum software TLL £3.50, Heathrow ATC £4, Tranz Am Atic Atac £3 each, Hobbit £8, Scrabble £5 + 9 more originals. Tel: 051 924 8832.

48K SPECTRUM keyboard, microdrive and interface I, 5 microdrive cartridges, Kempston interface, 6 machine code books, £120 of software, sound amplifier, v.g.c., worth £470, sell for £250 o.n.o. Tel: 0793 27500.

SPECTRUM 48K originals, Death Alley, Kaleidoscope, Meany Monster, Alien, Armada, Night Raider, #3.50 each, £15 the set. 4 St. James Court, Wricklemarsh Road, Blackheath, SE3 0NE. Tel: 01-856 8773.

48K SPECTRUM, Fuller FDS keyboard, light pen, Currah speech synthesiser, data recorder, 16 original games, mocrodrive and spare cartridge, interface I, Q Shot, joystick II. £300 o.n.o. Tel: 01-771 3448 after 8pm.

48K SPECTRUM, Currah speech, 2 interfaces, joystick, colour tv, cassette recorder, microdrive I/f I, 4 cartridges, over 70 games, mags and more. £50. Tel: 01-907 8964.

SPECTRUM GAMES and programs, all must disappear as soon as possible, Daley Decathlon, Knight Lore, Dark Star, Cyclone, Pole Position 2, Eddie Kidd's + 56-Way Edge Connector, £4 off at £5. Tel: Richard 01-7093.

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SPECTRUM 48K, real keyboard, Rotronics wafer drive, programmable joystick interface, Quick Shot joystick, 10 books, Alpha Core 32 printer, £200 of original s/w. Swap for latest QL or offers. Tel: Bangor 460195

SPECTRUM 48K, DK tronics keyboard, s/w. £100. Tel: West Drayton 442315.

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343.

All software offered through computer swap must be in original condition and for private sale only.

It cannot be swapped.
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SPECTRUM 48K s/w worth over £300, will sell lot for only £125, also ZX printer and paper £25, interface II and 2 joysticks £25. Tel: 01-853 3247 5pm-10pm.

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BRAND NEW 48K, ZX Spectrum, books, mags + s/w, £100 ono. Also lots of various mags for sale. Prices negotiable. Tel: 01-949 0225 ask for Paul.

Acorn for Sale

BBC MODEL B + disk interface + 200K drive, light pen, games etc. £550. Zenith monitor £75. Tel 01-785 6867.

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BBC B, £200 worth of original s/w, joysticks, Kempston + Acorn cassette recorder, many boxes + magazines, Acorn speech chip. £350 o.n.o. Tel: Milton Keynes 564373 after 6pm.

BBC B 05 1.2 over £160 of software, 2 joysticks + Sanyo b/w monitor + manuals, 6 months old, swap for CBM64 + drive or will accept £360 o.n.o. Tel: Trowbridge 02214 69912 after 4.30pm.

MITSUBISHI 400K disk drive for BBC with disk doctor ROM, £600 of original games. £200. Tel: 05827 69152.

BBC software for sale, Blagger, Visions, Snooker, Felix and the Fruit Monsters, Mission, Twin Kingdom Valley, £4 each or £15 lot. Tel: 0325 55410 after 6pm.

AQUARIUS for sale, 16K RAM, data recorder, s/w, books, user mags. £65 o.n.o. Tel: 0204 386065 after 6pm.

ELECTRON originals sale, Blagger £3, Moonraider £3.50, Meteors £3, Cybertron Mission £4, Superfruit £3, Forth £3, Personal money management £3. Derek, 22 Baring Street, South Shields, Tyne and Wear.

ELECTRON BOOKS sale, Acorn guide to Electron (Penguin) £4, games and other programs for electron (Penguin) £2.50, 9 Electron users £6. Derek, 22 Baring Street, South Shields, Tyne and Wear.

BBC B 1.2 o/s, data recorder, wordwise, Beebs/calc, disc doctor, games. £320 o.n.o. Tel: 0252 876825 eves.

APPLE 2E twin disc drive, monitor, parelle printer card, cable, quick file. £800 no offers. Tel: 01-641 7102 eves.

ELECTRON complete, immaculate condition, inc £40 worth of original s/w. £150. Tel: 0777 871552.

ACORN ELECTRON with new model data recorder, user guide, introductory cassette, basic and assembly language books and magazines for just £200 or swap for a v.g.c. Korg 800 synthesizer. Tel: Broadstore 691208 after 6pm.

APPLE II Europlus 64K, 12in green monitor + manuals. £300 for quick sale. Tel: 01-602 1530.

BBC B, brand new s/w. £389 o.n.o. Tel: Robin 04862 24004.

BBC B OS1.2, 2 joysticks, b/w Sanyo monitor, over £160 of original s/w, either sell for £315 or swap for CBM64 + slight cash adjustment, must be in good condition. Tel: 02214 69912.

ACORN ELECTRON, Serpent Stick Interface, £180 or original s/w, excellent condition, £240 offers. Tel: Gosport 526 399.

BBC B o/s 1.2, DFS, disk drive, s/w inc, business program, boxed as new. £535. Tel: Hornchurch 42642.

ACORN ELECTRON s/w for sale, half price. Elite, Twinkingdom Valley, Cyclon. Tel: 061 368 6935.

Commodores for Sale

CBM 64, 2 joysticks, 5 games, cassette recorder, 6 weeks old. £200. Tel: 01-735 3795.

CBM 64 Gemini cashbook + VAT package. Tel: 01-366 7115.

VIC 20 software, Skramble, Galaxions, Crazy Kong, Mission Impossible, all originals £2 each or will swap 2 for any Amstrad games or books. Tel: 0203 360 950.

CBM 64, plus tape recorder and £200 worth of s/w with accessorys. £295. Tel: 01-470 4483.

CBM 64, C2N cassette recorder, s/w, books, joystick, worth £400. £240. Tel: 0977 703796.

COMMODORE 64 s/w for sale, Ghostbusters, Starwars, Pole Position, Tapper, Spy Hunter, Up & Down, Zaxxon, Bluemax, Fij, Spitfire Ace, Pitfall II, Lipson Vale Post Office, Plymouth, Devon PL4 7HF. Tel: 0752 665200.

CBM VIC20 cassette deck, 16K RAM original, 60 s/w titles. £200 o.n.o. Tel: Alex 01-242 4433 ex 5208 8-4pm.

CBM 64 data recorder, joystick, books, s/w inc. Vahalla, Games Designer, Football Manager etc. £175 buyer collects. Tel: Andy 061 494 1822 after 6.30pm.

CBM 1520, 4 colour pirnter plotter, unused, all leads + paper. £80 o.n.o. Tel: 0252 878825.

VIC 20 starter pack plus Alien cartridge game and programming book, £55.00. Tel: Mk 660905 after six.

COMMODORE 64 plus C2N tape cassette unit plus lots of good s/w. All originals and very good condition, £195. Tel: Rayleigh 772788.

COMMODORE 64 origianal software, Tales of Arabian Nights. £4. The Dungeons, China Miner, Chinese Juggler, Cavelon, Hunchback. Tel: anytime 0703 420016.

COMMODORE 64 original software, Zimsalabim £5. Dallas Quest (disk) £8, Hobbit £7.50. Forest of Doom, Fame Quest, Ring of Power, £4 each. Tokens of Ghall, £3. Tel: anytime 0703 420016.

VIC 20, C2N 16K switchable, introduction to Basic part I. Quickshot II, s/w, mags, £110. Tel: 0702 540542.

VIC 20 C2N tape, £20. Vixen 16K RAM, £20. 1211A super expander, £20. Audiogenic Forth, £15. Tel: Berkswell 34122 evenings.

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VIC 20 as new + C2N cassette deck, Starter Pack + s/w, £110 ono. Tel: Sheffield 694457.

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DRAGON 32 for sale, over £150 s/w. 2 joysticks, new leads, 3 books, all boxed. Sell for £100, s/w includes Manic Miner, Hunchback, 2 Cartridges which are Meteoroids and Starship Cameleon. Tel: Woking 73863.

DRAGON S/W for sale (originals) over 20 titles including Juniors Revenge, Hunchback, King Tut, Hungry Horace, most around half price. Tel 0294 74446 or write: Robert, 148 High Street, Irvine KA12 8AH.

DRAGON 32 complete with 15 programs, free dustcover, £95. Tel: 0792 584937.

Tandy for Sale

APPLE 2E computer, micro soft, CPM, 64K, RS232, full keyboard with lower case, disc I/O, D/D, cost £1500. £800 o.v.n.o. Tel: Paul 01-630 1221 day, 01-515 2766 eves.

TANDY TRS80 colour computer, 32K manual, 1 Chess game. £60. Tel: 01-992 8276.

TANDY MC10, manual, leads, 5 tapes. £30. Tel: 02403 28786.

AQUARIUS hardware, s/w, half price, good condition. Tel: 031-663 4934.

TANDY CGT115, 4 colour printer/plotter, parallel + RS232, 10 rolls paper. £95. Tel: 0203 503038.

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ZX81, virtually new, boxed. £30. Tel: Esher 63055.

ZX81, boxed, very good condition, still works ZX81, plus printer pack and leads + manual, very cheap £5. Tel: 01-937 5764.

ZX81 RAM pack, 16K, £10. Asteroids £1.50, 3D Monster Maize £2, Geography £1, World Cup Football £1.25, Pop Music £1.25, lot for £5. Tel: West Malling 843889.

16K ZX81 with £40 of software, several books + magazines. In good working order. Complete with allleads and manuals, boxed only £45. Buyr collects.

ZX81, 16K RAM, cassettes + s/w, £60 ono. Tel: Harlow 414279.

ZX81 16K Memotech keyboard, manual, leads + 5 tapes, £50. Tel: 02403 28786.

ZX81 16K Ram pack made by Memotech, boxed, vgc. Only £20. Tel: 01-937 5764.

ZX81 S/W for sale. All original. Contact Mark. Tel: 0524 52920 after 6.30pm.

ADVENTURE HELPLINE

Return to Eden on Commodore 63. What do I do about the carrot? David Youngs, 34 Raedwald Drive, Bury St Edmunds, Suffolk.

The Inferno on Spectrum. I cannot open the chest near the Styx. Masco van Slagesem, Langswater 2GG, 1069 EC, Amsterdam, Holland.

Knights Quest on Spectrum. How do I get past the deserted lands? I have the magic compass. I can also help anyone stuck in the Hobbit. R Coffey, 26a Church Road, Littleshall, Shropshire TF10 9HE.

Crystal Theft on Amstrad. How do I get past the steel door? Ms S Bishop, 107 Bollington Road, Macclesfield, Cheshire SK10 5EL.

Heroes of Karn on Commodore 64. I can't kill the pirate and I can't find the golden key. How do you cross the chasm, open the clam or fill the bottle? Martyn Oakley, 26 Grant road, Spixworth, Norwich, Norfolk NR10 3NN.

Pyramid of Doom on TI99/41. How do I move in or light the room full of mirrors? C Bend, 20 Hale Carr Grove, Heysham, Morecambe, Lancs.

Greedy Gulch on Spectrum. How do you get the water pump on the town square to work? Asle Davidsen, Oscar Pettershaw. 12, 1600 Fredrikstad, Norway.

Madness and the Minotaur on Dragon. I have found the mushroom twice without result but I have never yet found a way out of the maze. Bill Amer, 48 Home Park Road, Saltash, Cornwall PL12 6BH.

Twin Kingdom Valley on Commodore 64. I have 1024 points and all the treasures. How do you finish the game after this? P Arthur, 250 Baldwin Lane, Croxley Green, Herts WD3 3LQ. Tel: 0923 770607.

Return to Eden on Amstrad. How do I avoid being killed by the Snowball's engines? David Heggie, 88 East Claremont Street, Edinburgh, Scotland EN7 4JE.

Velnors Lair on Spectrum. How do I get past the first level? How do I pass the crocodiles? T M Bruce, 92 Queen Street, Peterhead, Aberdeenshire AB4 6TT.

Pyramid on Vic 20. I have reached the dusty cellar and do not know how to go further. Stephen Bowes, 104 Western Road, Goole, N Humberside DN14 6RD.

Fantasia Diamond on Spectrum. How do you get out of the cellar? Roland Wilson, 27 Brian Close, Wooton Basset, Swindon, Wilts.

Kentilla on Spectrum. How do you get out of the castle and find the dry moss? Chris Rainer, 2 Mill Road, Hinckley, Leicestershire LE10 0AX.

Stolen Lamp on BBC. How can I get the sword out of the pillar and get the keybox out of the column without the ceiling falling on me? Michael Mitchell, 199 Fitzhubert Road, Sheffield S2 1EJ. Tel: 0742 657466.

Twin Kingdom Valley on Commodore 64. I cannot get the master key from the dragon. Stephen Coyne, Garden Flat, Rougemont, Easthill Road, Ryde, Isle of White PO33 1LS.

Wapton Village Race on Amstrad. How do I get past the policeman and how do I enter the house of ill repute? David Halliwell, 4 Heatherdale Close, Oxton, Birkenhead, Merseyside L42 9QK.

Twin Kingdom Valley on Commodore 64. How do you get into the Desert King's castle? Carl Walker, 6 Larkspur Gardens, Templeton, nr Narberth, Dyfed, S Wales.

Evil Realm on Spectrum. I'm going crazy! How do I get past the gorgon? (It's a brilliant adventure) help! Simon Weir, Corner Cottage, 47 Castle Road, Southall, Middx.

Zork's Kingdom on Vic 20. How do I stop falling down the 'deep pits'? Paul Brake, 8 Drum Terrace, Edinburgh EH7 5NB.

Urban Upstart on Commodore 64. How do I stop sinking on the building site and where is the credit card for the bank? Karl Marah, 20 Cocknage Road, Dresden, Stoke-on-Trent, Staffs ST3 4AP.

Twin Kingdom Valley on Commodore 64. How do I get the master key from the dragon? G. Kilaby, 30 Wheatfields, St Ives, Hunts, Cambs PE17 4YD.

Quest of Meravid on Commodore 64. Everytime I get to the glacier to get the gauntlets I die of hypothermia. Paul Hart, 4 Dimsdale Drive, Kingsbury, London NW9 8NT.

Greedy Gulch on Spectrum. How do I find the mine? I am in the desert looking at the map. How do I get into the stockyard? Steve Fox, 6 Worthington Street, Old Trafford, Manchester M16 9LA.

Valhalla on Spectrum. Please will somebody tell me where Skornir is? Bruce Vivers, Wavel House, Hillhead Halls, Don Street, Aberdeen, Scotland.

Escape From Pulsar 7 on BBC. How do I open the locker on the ceiling above the captain's bunk? How do I move the wreckage in the wrecked room in the maze? Kevin Squires, 3 Crane Walk, Thorplands Brook, Northampton NN3 4YE. PS I have solved Countdown to Doom on BBC if anyone needs help.

10 Little Indians on Spectrum. I have the Red, Yellow, Blue, Green, Silver, Grey, White, Black and Pink figurines. Where is the last one? Peter Perrin, 171 Ibscott Close, Dagenham, Essex RM10 9YX. Tel: 01-595 4923.

Vic 20

1	Duck Shoot	(Mastertronic)
2	Perils of Willy	(Software Projects)
3	Sub Commander	(Thorn/EMI)
4	Computer War	(Thorn/EMI)
5	Tank Commander	(Thorn/EMI)
6	Flight 015	(Craig Communications)
7	3D Maze	(Mastertronic)
8	Max	(Anirog)
9	Maze Gold	(Visions)
10	Mickey the Brickey	(Firebird)

(Compiled by Websters Software)

Commodore 64

1	Daley Thompson's Decathlon	(Ocean)
2	Chiller	(Mastertronic)
3	Scrabble	(Leisure Genius)
4	Kong II	(Ocean)
5	Hunchback II	(Ocean)
6	BMX Racers	(Mastertronic)
7	Booty	(Firebird)
8	Fighter Pilot	(Digital Integration)
9	Jet Set Willy	(Software Projects)
10	Monopoly	(Leisure Genius)

(Compiled by Websters Software)

Spectrum

1	Match Day	(Ocean)
2	Airwolf	(Elite)
3	Hunchback II	(Ocean)
4	Booty	(Firebird)
5	Kong Strikes Back	(Ocean)
6	Snooker (Steve Davis)	(CDS)
7	Jet Set Willy	(Software Projects)
8	Daley Thompson's Decathlon	(Ocean)
9	Rhunes of Zandos	(Torcas)
10	Matchpoint	(Sinclair)

(Compiled by Websters Software)

BBC

1	Elite	(Acorn)
2	Manic Miner	(Software Projects)
3	Pole Position	(Atari)
4	Frak	(Aardvark)
5	747 Simulator	(D/Soft)
6	Sabre Wulf	(Ultimate)
7	Scrabble	(Leisure Genius)
8	Challenger	(Mastertronic)
9	Spectipede	(Mastertronic)
10	Star Maze 2	(Mastertronic)

(Compiled by Websters Software)

Atari

1	Solo Flight	(Centresoft)
2	Encounter	(Hi-tech)
3	Computer War	(Atari)
4	Computer Chess	(Atari)
5	Gridrunner	(Llamasoft)
6	Carnival Massacre	(Atari)
7	Sub Commander	(Thorn/EMI)
8	Attack of the Mutant Camels	(Llamasoft)
9	Tank Commander	(Thorn EMI)
10	Leggit	(Imagine)

(Compiled by Websters Software)

Dragon 32

1	Manic Miner	(Software Projects)
2	Hunchback	(Ocean)
3	Sprite Magic	(Knight Software)
4	Bug Diver	(Mastertronic)
5	Chuckie Egg	(A & F)
6	The King	(Microdeal)
7	Dragon Chess	(Oasis)
8	Mystery of Java Star	(Shards)
9	Ring of Darkness	(Wintersoft)
10	Kriegspiel	(Beyond)

(Compiled by Websters Software)

Amstrad

1	Snooker (Steve Davis)	(CDS)
2	Football Manager	(Addictive)
3	Blagger	(Alligata)
4	Manic Miner	(Software Projects)
5	Forest at World's End	(Interceptor)
6	Fantasia Diamond	(Hewson)
7	Flight Path 737	(Anirog)
8	Ghouls	(Micro Power)
9	Monster Chase	(Romik)
10	Return to Eden	(Level 9)

(Compiled by Websters Software)

Event	Dates	Venue	Admission	Organisers
Hi-Technology and Computers in Education Exhibition	Trade: Jan 24 10.00am-1.00pm Educationalists: Jan 24 1.00pm-8.00pm Jan 25 11.00am-8.00pm Public: Jan 26 11.00am-6.00pm	Barbican London EC2	Free in advance from organisers	Computer Marketplace 01-930 1612
Apricot and Sirius Computer Show	Feb 5-7 10.00am-6.00pm	Kensington Town Hall London W8	Free in advance from organisers	Paradox 01-241 2354
14th ZX Microfair	Feb 9 10.00am-6.00pm	Alexandra Palace London N22	£1.25 Adults 80p Children (in advance)	Mike Johnson 01-809 9172
The LET'85 International Trade Show	Feb 17-18 10.00am-6.00pm Feb 19 10.00am-4.00pm	Olympia 2 London W6	Free in advance from organisers	Turret-Wheatland 0923 777000

Readers' Chart No 8

1	(1)	Knight Lore *(Spectrum)*	**Ultimate**
2	(3)	Ghostbusters *(Spectrum/C64)*	**Activision**
3	(2)	Daley Thompson's Decathlon *(Spectrum/C64)*	**Ocean**
4=	(4)	Underwurlde *(Spectrum/C64)*	**Ultimate**
4=	(5)	Elite *(BBC/Electron)*	**Acornsoft**
6	(–)	Match Day *(Spectrum/C64)*	**Ocean**
7	(–)	Raid Over Moscow *(C64)*	**US Gold**
8	(9)	Manic Miner *(Spectrum/C64/Amstrad/MSX/Dragon)*	**Software Projects**
9	(8)	Pyjamarama *(Spectrum/C64/Amstrad)*	**Mikro-Gen**
10	(–)	Tapper *(C64)*	**US Gold**

Now voting on week 10

Each week Popular is compiling its own special software top ten chart – compiled by YOU.

All you have to do to vote is to fill in the form below with the names of your current three favourite software titles (or copy the form on to another sheet if you don't want to damage your magazine) and send it off as soon as possible to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 10 closes at 2pm on Wednesday January 30 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .....

Address .....

.....

.....

My top 3: Voting Week 10

1.....

2.....

3.....

BIZARRE

Romik certainly release a lot of programs. Latest two are *Knightmare* and *Captain Starlight*, both for the C64.

These two are claimed to be the last two major releases from the company before the release of its 'The 4th Generation' mega project, whatever that is.

Knightmare the more interesting of the two. It is arcade/adventure of the *Atic Atac* kind and though not original is likely to appeal to Commodore owners who don't have access to that (Spectrum) program. *Knightmare* even has vaguely the same characters as *Atic* – you are a little cartoon knight and must wander around the various rooms of a castle. Soon after you arrive in each room dozens of bizarre animals appear, most of which are dangerous.

The basic idea is to collect spells and treasure. This (thankfully) isn't just a matter of wandering about and picking them up, but rather it is a question of working out what action does what to produce what spell. There are all kinds of objects lurking about and many have a key function somewhere or other in the game. You work out what and where.

All in all it's not at all bad at £6.99 – not expensive for a Commodore game. Hardly daringly original, though.

Program *Knightmare*
Price *£6.99*
Micro *Commodore*
Supplier *Romik*
272 Argyll Avenue
Slough SL1 4HE

AUTHENTIC

The Commodore version of *Ghostbusters* was everybody's favourite game; the musical arrangment was so ingeniously constructed that an authentic funk track was created, almost good enough to listen to apart from playing the game. Coupled with this was digital speech shouting GHOSTBUSTERS! to your command – it was all utterly infectious, like the movie.

But what of the Spectrum version? As everybody knows Spectrum sound was designed with the overriding intention that the deaf shouldn't be jealous. How is three track boogie synthesis going to sound on a one channel door bell fitment? And what is the game like?

The Spectrum digital speech is better than anything on the machine I've heard before (with the exception of that provided by special add-ons), but is nothing like as effective as the Commodore equivalent. The music is as hopeless as you feared – all blips and boing – you won't be lingering over the intro section on this one.

The actual game is quite faithfully recreated. Unlike some Spectrum games it is in no way superior to the Commodore version, indeed is definitely worse, but the graphics are at least adequate. The program is, summarising, a fair implementation of the Commodore game, neither horrendous nor brilliant. The biggest problem, apart from the sound, is Activision's pricing structure – this program does not justify a £9.99 price in anything like the same way that the Commodore version did justify a £10.99 tag – it should be £5.95. Nevertheless if you loved the film you may next want the game, but don't expect too much.

Program *Ghostbusters*
Price *£9.99*
Micro *Spectrum*
Supplier *Activision*
15 Harley House
Marylebone Road
London NW1

TEDIOUS

Automan – part Hologram, part Californian person, part computer, part hokem, part special effect and part exchange because that's what you'll be wanting to do with this program if you buy it. *Automan*, the officially licensed program, is the most recent Bug Byte biggy – biggy in the sense that it comes in a big cardboard box and costs £9.50.

Doubtless some people will buy the program simply because it is to do with *Automan*, their favourite TV program; to these people I can offer little solace. The game is in two sections: a *Jet Set Willy* screen and 'all - those - 3D maze - games - with - simple - perspective - line - drawing - to - make - up - the - walls' bit.

In the *Jet Set Willy* screen,

some completely irrelevant obstacles must be avoided. As you jump left and right to get a little white blob in the far corner, sprites bounce and wobble. There are the usual ladders and platforms and quite honestly it looks like Bug Byte slapped these bits into the game after finding that they had something left over from a similar disaster.

The other section is completely different. You drive around in your autocar moving between the walls of the city looking for a bomb that has been placed there. A timer ticks away the moments until it goes off. The best that can be said about it is that the scrolling is OK.

If all this seems hard then let me justify it this way – the name of the game alone is going to ensue that people buy it, this is why software companies bother to pay large sums of money for such rights.

Program *Automan*
Price *£9.50*
Micro *Commodore 64*
Supplier *Bug Byte*
Mulberry House
Canning Place
Liverpool L1 8JB

This Week

Program	Type	Micro	Price	Supplier
Bridge It	Arc	Amstrad	**£7.95**	Amsoft
Classic Racing	Arc	Amstrad	**£7.95**	Amsoft
Mutant Monty	Arc	Amstrad	**£7.95**	Amsoft
Mr Wong's Loopy Laundry	Arc	Amstrad	**£7.95**	Amsoft
Roland Ahoy	Arc	Amstrad	**£7.95**	Amsoft
Roland on the Run	Arc	Amstrad	**£7.95**	Amsoft
Space Hawks	Arc	Amstrad	**£7.95**	Amsoft
Stockmarket	S	Amstrad	**£7.95**	Amsoft
Bridge 85	S	BBC	**£9.95**	Alligata
Storm Flight Path	Ed	BBC	**£20.30**	Storm
Roller Kong	Arc	C16	**£5.95**	Melbourne Hse
Automan	Arc	Commodore 64	**£9.50**	Bug-Byte
Bridge 85	S	Commodore 64	**£9.95**	Alligata
Captain Starlight	Arc	Commodore 64	**£6.99**	Romik
Desk Diary	Ut	Commodore 64	**£29.95**	Assoc Services
Empire of Karn	Ad	Commodore 64	**£7**	Interceptor
Knightmare	Arc	Commodore 64	**£6.99**	Romik
Bridge 85	S	Electron	**£9.95**	Alligata

New Releases

WAVES

Before the days of Mastertronic it used to be possible to say of every simple, rather unexciting and unprofessional games from tiny software companies that at least they were cheap.

Which they usually were. Contrary to popular belief most reviewers are amiable buffoons and have no wish to pour scorn on the efforts of individuals who are probably not making big claims for their programs anyway – it's the glossy-ad, over-priced rip-offs that get hammered.

The problem with Mastertronic was that here was a professional company putting out quite reasonable (and often good) programs for £1.99 – less than most of the home-made efforts.

Consequently, there are now problems over being nice about something like *Hypertron*. This is a program costing a mere £2.50 for the the Spectrum.

Hypertron is not a bad program. As a first effort it is commendable but, unfortunately, compared with some of Mastertronic's efforts it isn't technically very good. You defend your moonbase with your super-dooper starship thingy. Then you get wave after wave of aliens which wander about the screen – I got through five levels until I fell asleep. The graphics are quite nice and large, well designed even, but don't move well – all character position movement rather than smooth sprite scrolling. The sound effects, however, are not bad.

In the old days I could have said something like if you fancy a very straight shoot 'em up then for £2.50 you haven't got much to lose but quite honestly, you don't have any reason to buy this at all anymore. For £1.99 you can do better elsewhere.

Program *Hypertron*
Price *£2.50*
Micro *Spectrum*
Supplier *8 Pine Dale Rainford Merseyside WA11 8DP*

PATTERNS

Although there is no Spectrum equivalent of Jeff Minter's awesome *Psychedelia* yet available, people currently casting envious glances at that program who own Spectrums could do a lot worse than *Disco Screen* which has similar intentions but works a different way.

Unlike *Psychedelia* which gave you complete control over a sophisticated range of light and pattern effects, with *Disco Screen* you have no control at all.

What the program does, instead, is react directly to the sound which you feed into the Spectrum via the Ear socket on the machine.

The idea is this: you play your favourite music (or whatever) and feed the sound output of your cassette player into the Spectrum. The program works in two modes 'Disco' and 'Relax' (the latter does not have anything to do with Frankie Goes to Hollywood but instead tends to produce less garish patterns than Disco). The program uses the sound to produce complicated patterns on the screen which are intended to reflect the patterns in the music.

The key to any program like this is the degree to which the patterns can be matched to the music and actually this program works quite well. The music is used to trigger moire patterns, oscilloscope-like traces, and all kinds of other blocks of colour.

It works best on music that stops and starts a lot, but generally the correspondance between music and pattern is quite good.

Those dreadful colour attribute problems crop up continuously though, sometimes they look OK but equally often make you feel extremely ill.

An interesting and different program well worth tracking down.

Program *Disco Screen*
Price *£7.95*
Micro *Spectrum*
Supplier *PSU Byproducts PO Box 510 Carless Avenue Birmingham B17 9ES*

Pick of the week

UNPREDICTABLE

You can get a certain sense of *deja vu* reviewing the latest batch of Amsoft releases, there is a simple reason for this – most of the current stuff are conversions of previous successful (or semi successful) programs.

Nevertheless the Amstrad programs are often an improvement on the originals and here and there you get some real gems.

Splat was a program that, though successful, didn't get the enormous following it deserved when submerged beneath a great weight of Spectrum software. As an Amstrad program its worth may be more quickly apparent and with any luck it'll become one of the essential programs for the machine.

Unlike all those games where you move around a maze, in *Splat* the maze moves around you – worse than that it moves around you in an unpredictable way. This

This Week

Bridge 85	S	MSX	**£9.95**	Alligata
Castles and Clown	Ed	Spectrum	**£5.95**	Macmillan
Disco Screen	Ut	Spectrum	**£7.95**	Ash Bybroducts
Hellfire	Arc	Spectrum	**£6.95**	Melbourne Hse
Quiztimer	Ed	Spectrum	**£5.95**	Macmillan
Out of the Shadows	Ad	Spectrum	£7.95	Mizar
Snapple Hopper	Ed	Spectrum	**£5.95**	Macmillan
Space Scan	Ed	Spectrum	**£5.95**	Macmillan
Sunflower Number Show	Ed	Spectrum	**£5.95**	Macmillan
Supermind	S	Spectrum	**£1.99**	A+B PG
Tops and Tails	Ed	Spectrum	**£5.95**	Macmillan
Bridgehead	S	ZX81	**£3**	Gavin Barker

Key: **Ad** – adventure **Arc** – arcade **Ed** – education **S** – strategy-simulation **Ut** – utility

simple piece of role reversal makes for a totally new sort of game and you desperately try to avoid getting crushed by a maze wall – this happens when you get pushed into the corner of the TV screen.

The only other objective is to eat as much grass as possible and move through the levels, there are eight in all, and each is more difficult.

It's simple and it's wonderful. The only criticism I might make is that the authors haven't really developed it at all using the extra features of the Amstrad over the Spectrum. Even the sound is pretty much what you'd get from the dire Spectrum bleeper. Despite that, buy it.

Program *Splat*
Price *£7.95*
Micro *Amstrad*
Supplier *Amsoft*
169 Kings Road
Brentwood
Essex

SYNTHETIC

Fans of *Heroes of Karn*, and there are many, will be pleased to learn that part two of that trilogy, *Empire of Karn* is soon to be released.

For those who didn't play the original it was marked by neat (if very slow) graphics, reasonably sophisticated language analysis, but more than anything else, clever puzzles, some very difficult problems and lots and lots of action.

The plot I really cannot go into; told as straight narrative it has the usual hallmarks of adventure games, ie, the Programmer(s) O D-ing on bad fantasy fiction. Yes, it's all about magic swords, lords going dark, ancient mysteries

and funny names like Zhef the Insane.

In any event it's probably marginally less trite and silly than the usual plots of most adventures.

The very first location has a tricky little problem in it – you see a sword it says, you go to get it and are told that it is held by a mysterious force. In the immediate locations there are dozens of highly investigable objects and likely looking locations, and its this property that makes the adventure good – there are plenty of options.

I'm not so sure about the continuous synthetic chamber music, however, although generally I'm a great believer in adding sound effects to adventures.

You could do a lot worse things with your time than save the Empire of Karn from Zhef.

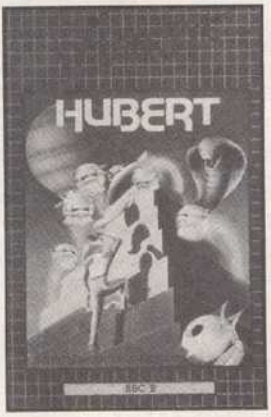
Program *Empire of Karn*
Price *£7.00*
Micro *Commodore 64*
Supplier *Interceptor Micro's*
Lindon House
The Green
Tadley
Hants

NO LOGIC

God knows what goes through some companies' minds when they decide a game should be released? For example, supposing you are the manager of a software house (having moved there from hoola hoops, skateboards, CB radio, cabbage patch kids and double glazing) and someone plonks on your desk a game which is an average version of a program that has been done to death by lots of other companies and is, anyway, totally unexciting and old hat. What would you do?

a) Sent it back with a polite rejection note: b) decide to release and support it with colour ads? If you answered 'b' then you have what it takes to be in charge of a software house.

Hubert is, you might guess, *Qbert* and it is for the BBC B. It is a pretty exact copy of the original with 18 screens, platforms to escape on and various funny monsters that jump down a 3D pyramid at you. You are on a time limit for each screen, indicated by a line of paint that gradually runs out. The sound effects are bright and tacky and at £5.50 I suppose it's marginally cheaper than most BBC games, but the logic of its release is beyond me.



Program *Hubert*
Price *£5.50*
Micro *BBC B*
Supplier *Consolidated Software Marketing*
Suite 38, Strand House
Great West Road
Brentford
Middlesex

INTELLIGENT

You'd have thought that every possible machine code utility had been issued and perfected, but every once in a while a new one comes along. This one is called *Disassembler/Relocator* and comes from Draysoft. When it comes to this sort of thing, it's no good pretending I'm much of a judge of good from bad so I'll just tell you what it says in the blurb.

The *Disassembler* is very fast and handles the bytes after RST 08h and RST 28h correctly. It will also handle all of the extra Z80 instructions properly. The *Relocator* is intelligent and will not try to relocate labels or text. It will also save the relocated code to tape with the correct header.

The manual is very extensive indeed including an appendix printing information out via RS232 and Interface 1.

Program *Disassembler/Relocator*
Price *£5.95*
Micro *ZX81 16K*
Supplier *Draysoft*
2 Bedford Way
Rugeley
Staffs

A+B PG, Solon 11c, Eylendjia, Nicosia, Cyprus. **Alligata**, 1 Orange Street, Sheffield S1 4DW. 0742 755796. **Amsoft**, Brentwood House, 169 Kings Road, Brentwood, Essex CM14 4EF. 0277 230 222.**Ash Bybroducts**, PO Box 510, Carless Avenue, Birmingham B17 9ES. **Associated Services**, 23 Chesham Street, London SW1 8NQ. **Bug-Byte**, Mulberry House, Canning Place, Liverpool L1 8JB. 051 709 7071. **Gavin Barker**, 12 Fleming Field, Shotton Colliery, County Durham. 0783 261405. **Interceptor**, Lindon House, The Green, Tadley, Hants. 07356 71145. **Macmillan**, 4 Little Essex Street, London WC2R 3LF. 01-836 6633. **Melbourne House**, 39 Milton Trading Estate, Abingdon, Oxon OX14 4TD. 0235 835001. **Mizar**, 104 Bradwell Road, Bradville, Milton Keynes MK13 7DH. **Romik**, 272 Argyll Avenue, Slough, Bucks SL1 4HE. 0753 71535. **Storm**, Newbury Court, High Street, Gillingham, Dorset SP8 4QX. 07476 2774.

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

Rarefied heights

I have a message from upmarket. This is the new, computer-snobbish Langford calling from the rarefied upmarket heights. Are you receiving me yet . . ?

I found it hard to be a computer snob in 1984: the spirit was willing, but the machine was only a Commodore 64. Hard to find anyone to look down on from that position, except the odd Spectrum owner (and even they tended to get uppity about software quality). So a few days ago I took the plunge and bought an Apricot – Barclaycard will *not* be amused – and looked forward to a future of being a Real Professional. No more awkward software problems, no more missing bits of hardware, not at this price!

Yes, well, I always have been a bit naive. I wasn't very good at the subtleties of these classy computers, but even my untrained eye spotted the first difficulty when we opened the box. "Er, shouldn't there be a mains lead?" (Or did the thing operate on solar power? An inbuilt reactor? Microwave beams from synchronous-orbit satellites?)

"Oops," said my dealer. "Look, I'll lend you one. Now here's the monitor . . . hey, this'll make you laugh, when they delivered it the display was out of focus. You'd have had to pay carriage costs to send the thing all the way back to ACT and have them adjust it, only luckily I have this pal who did a bootleg job last night." I made a mental note to buy my dealer a pint.

"Here are the system software disks," he went on, "and in the box will be a voucher entitling you to a Concurrent CP/M operating system – you won't want it, but it comes free, so you may as well – Oops. ACT seem to have left it out." I made another mental note, not of the same kind.

"I'll try and get them to send it on . . . Now, you boot up the system like *this*. How about if you try your hand at formatting a disk while I just ring ACT? Got a bone to pick with them."

The disk formatting turned out to be very jolly and user-friendly: no mucking around with special appalling commands like the CBM64's, you just followed the right menu path from power-up. I selected the option *Disk*; them *Format*; then *Right* (picking the right-hand drive); then . . . gosh, it was doing it!

"It shouldn't be doing that!" shrieked my dealer in panic, having failed to get through. "It should ask you whether you want to format single-sided or double-sided disks. Argh! It's done it single-sided! That's wrong!"

Quickly we pieced together the exciting story. My utility software was an ancient release from before the days of double-sided disks. Thus it automatically formatted them so as to give me half the storage capacity I'd paid for.

"We'll just copy the modern utilities from my own disks," said my dealer very wearily.

"Pints," I told him encouragingly. "Enormous pints." And we went off to drink some.

The beautiful moral of this tale is that even after paying vast sums for a business machine, you can meet just as many cock-ups and have just as much challenging fun as with anything from the cheap and nasty end of the market. Of course, everything's been seen to now, and I'd be word-processing this very article on my shiny new Apricot, if only my otherwise wonderful dealer had remembered the printer cable.

David Langford

Zero to nine

Puzzle No 142

There are many ways in which ten plastic counters, numbered with the digits zero to nine, can be arranged so as to form a complete addition, subtraction, multiplication or division sum, using in each case all ten counters.

In the example below, is a simple multiplication sum, but, as you can see, all of the counters are turned face down – except for the one on the extreme right.

○○○×○○=○○○○①

Can you determine what numbers are on the other counters?

Solution to Puzzle No 137

The ages were 9, 45, and 63 and the event occurred in 1944.

We are required to find three integers a, b, and c, such that $c^2 - b^2$ is equal to $b^2 - a^2$, the difference in each case being the same and equal to a year in the last half-century.

```
10 LET B=15
20 FOR A=1 TO B-15
30 LET DIFF=B*B-A*A
40 LET S=B*B+DIFF
50 LET C=SQR(S):C=VAL(STR$(C))
60 IF C=INT(C) THEN PRINTA;B;C,DIFF
70 NEXT A
80 LET B=B+1
90 GOTO 20
```

Taking the two smaller ages the program calculates the difference between the squares of these ages and then adds this difference on to the square of the higher of the two ages. The square root of this number, if it is integral, represents the third age. As the question states that the answers should be legally and biologically possible, only those with a minimum difference of 15 between the ages are considered. There are a number of possible sets of figures but only one has the difference of the squares in the range 1934 – 1984.

Winner of Puzzle No 137

The winner of Puzzle 137 is R. M. Gosling of Alveston, Bristol, who receives £10.

Rules

The closing date for Puzzle No 142 is 8 February.

The Hackers

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